DOES NOT CIRCULATE

BULLETIN OF THE HISTORY OF MEDICINE

UNIVERSITY OF MICHIGAN
DEC 12 1956
MEDICAL LIBRARY

ORGAN OF
THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE
AND OF
THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

VOLUME XXX SEPTEMBER-OCTOBER, 1956 NUMBER 5

CONTENTS

MAIN ARTICLES

The Professional Ethics of the Greek Physician: LUDWIG EDELSTEIN 391

AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE: Twenty-Ninth Annual Meeting (Cont'd):
The Fielding H. Garrison Lecture: Medicine and the Historian: F. N. L. POYNTER 420

TEXTS AND DOCUMENTS

Rudolf Virchow: Standpoints in Scientific Medicine: Translated by L. J. RATHER 436

David Monro's Lecture on the Expression of Passion, 1840: REX E. WRIGHT-ST CLAIR 450

NOTES AND COMMENTS

The First Account of a Meningioma: MARTIN G. NETSKY and JEAN LAPRESLE 465

John Redman Coxe and the Founding of the Chemical Society of Philadelphia in 1792: WYNDHAM D. MILES 469

MEDICO-HISTORICAL NEWS AND ACTIVITIES

Correspondence and Reports: Joseph Hersey Pratt, M. D., Sc. D. (Benjamin Spector)—Museum of History and Technology (George Griffenhagen)—Report on the Activities of the Alabama Society of Medical History (Emmett B. Carmichael)—Translation of Latin Material (James M. Northington) 473

Announcements 477

BOOK REVIEWS 480

CONTRIBUTORS TO THIS NUMBER 488

THE JOHNS HOPKINS PRESS
BALTIMORE 18, MARYLAND

BULLETIN OF THE HISTORY OF MEDICINE

ORGAN OF
THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE
AND OF
THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

Founded by HENRY E. SIGERIST

Editor—OWSEI TEMKIN

Assistant Editor—JANET B. KOUDELKA

ADVISORY EDITORIAL BOARD

WYNDHAM B. BLANTON — ESMOND R. LONG
GEORGE W. CORNER — RICHARD H. SHRYOCK

Manuscripts, review copies of books, and correspondence relating to the publication of papers should be addressed to The Editor, Bulletin of the History of Medicine, 1900 E. Monument St., Baltimore 5, Md.

Contributors of articles will receive 25 reprints without covers free of cost. An order form for additional reprints, giving the cost, is sent with the galley proof.

The Bulletin is published bimonthly. One volume of at least 500 pages is published during the year. The subscription rate is $6.00 a year in the United States and countries of the Pan-American Union, $6.25 in Canada, and $6.50 in other foreign countries. Single numbers when available are $1.50 each. Prices for back volumes may be had on application. Volume I is out of print. New subscriptions are entered to begin with the first issue of the current volume.

Active and Non-resident Members of the American Association of the History of Medicine receive the Bulletin on payment of $6.00 annual dues, of which $5.00 is for a year's subscription. Constituent Societies pay $10.00 annual dues, of which $6.00 is for a year's subscription to the Bulletin.

Claims for replacement of missing numbers must be received within 3 months (6 months in the case of foreign subscribers) following publication of the number.

THE JOHNS HOPKINS PRESS

BALTIMORE 18, MARYLAND, U. S. A.

PUBLISHED BIMONTHLY

January-February, March-April, May-June, July-August, September-October, November-December

Made in United States of America

Entered as second-class matter January 3, 1935, at the post office at Baltimore, Maryland, under the Act of March 3, 1879.

BULLETIN OF THE HISTORY OF MEDICINE

ORGAN OF
THE AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE
AND OF
THE JOHNS HOPKINS INSTITUTE OF THE HISTORY OF MEDICINE

VOLUME XXX SEPTEMBER-OCTOBER, 1956 NUMBER 5

THE PROFESSIONAL ETHICS OF THE GREEK PHYSICIAN [1]

LUDWIG EDELSTEIN

William Osler, for whom this lecture in the history of medicine is named, has many claims to fame. No one is greater, I venture to think, than that, in the midst of a busy life devoted to the bodily welfare of man, he never for one moment forgot about man's intellectual and moral aspirations. An unexamined life, to use a phrase of Plato, he found not worth living. The physician and scientist turned historian, even philosopher, because he wanted to understand the meaning of human existence. And once he had made his own decision, he also felt impelled to speak out in advocacy of the " Way of Life " he thought he had discovered.

To his truly humanistic teaching—namely that the task and the dignity of the human being consist in the individual's willingness to live up to an ideal and to be of help to others—Osler finally gave expression in categories of William James' pragmatism, the philosophy that gained ascendancy in his later years. On the other hand, he was quite aware of the fact that his creed was not of today or yesterday, but took its origin and was put into practice long ago. When formulating his basic tenets for the last time, he characterized as the heritage of Plato and as " the

[1] The William Osler Lecture in the History of Medicine, Faculty of Medicine, McGill University. This lecture was given in the Amphitheatre of the Montreal General Hospital on December 9, 1955. It is here printed in a somewhat extended form, though substantially unchanged. I have added some footnotes referring to the pertinent literature and giving fuller documentation concerning certain points than was possible in the lecture.

Greek message to modern democracy" that "need for individual reconstruction" with which "is blended the note of individual service to the community." At the same time, he pointed out that such an idealism once existed in Greece even in the daily pursuits of men of action. For to the ancient physician "the love of humanity [was] associated with the love of his craft—*philanthropia* and *philotechnia*—the joy of working joined in each one to a true love of his brother." [2]

It is this appreciation of the humanism of the Greek doctor on the part of the humanist Osler that determined me to choose as my topic the professional ethics of the Greek physician. No other subject within my reach seemed more appropriate for a lecture in his memory. I wish to outline the various ethical positions taken by ancient physicians. In particular, it will be my aim to find out when and where the idea originated that medicine itself imposes certain obligations upon the physician, obligations summed up in the magic phrase "love of humanity." For, in my opinion, this lofty ideal was not the only one in antiquity that motivated the help proffered by medical men to those who suffer and are in distress. Over a long period of time other concepts of medicine and therefore other obligations and duties were held in high esteem. Rome was not built in one day.

Now at first glance it may seem as if such a contention were in fact quite unwarranted. For is it not in one of the Hippocratic writings, the essay called *Precepts,* that the statement occurs which Osler quoted: "Where there is love of man, there is also love of the art" (ch. 6)? Is it not said in another Hippocratic book, the treatise *On the Physician,* that the doctor must be a "lover of man" (ch. 1)? And does not Galen, no mean judge in these matters, expressly assert that Hippocrates, Empedocles, Diocles, and not a few of the other early physicians healed the sick because of their love of mankind (*De Placitis Hippocratis et Platonis,* ed. I. Müller, p. 765)? In the classical age of Greek civilization, then, the ethic of philanthropy seems already to have been securely established.

But if one scrutinizes carefully the context in which the word "philanthropy" appears in the so-called Hippocratic writings just mentioned, he realizes that it means no more than a certain friendliness of disposition, a kindliness, as opposed to any misanthropic attitude. A "philanthropic" doctor in the sense in which the term is used in the treatise

[2] *The Old Humanities and the New Science,* 1920, p. 62 f. For Osler's humanism and his adherence to James' pragmatism, cf. L. Edelstein, "William Osler's Philosophy," *Bull. Hist. Med. 20,* 1946, pp. 280 ff.

On the Physician (ch. 1) will comport himself in a dignified manner; for aggressiveness and obtrusiveness are despicable; sour looks, harshness, arrogance, vulgarity, are disagreeable.[3] Likewise, the Hippocratic *Precepts* (ch. 6) understands by the doctor's "philanthropy" his kind-heartedness and his willingness to accommodate his fees to the patient's cirmumstances. He should also treat strangers and paupers, even if they are unable to pay him. That is, he should be charitable, recalling some of the benefits which he may have received himself in the past, or thinking of the good name that his charitableness is likely to make for him in the future. If he acts thus, if such "philanthropy" is present on his part, then also "love of the (medical) art" will be kindled in his patients, a state of mind that greatly contributes to their speedy recovery, especially when they are dangerously sick. No more—and no less—is implied by the famous aphorism: "Where there is love of man, there is also love of the art."[4]

[3] U. Fleischer, *Untersuchungen zu den pseudohippokratischen Schriften* Παραγγελίαι, Περὶ ἰητροῦ *und* Περὶ εὐσχημοσύνης (Neue Deutsche Forschungen, Abt. Klass. Philologie), 1939, pp. 1; 54, seems to take φιλάνθρωπος to refer to "love of mankind." Yet Jones is surely right in translating the word as "kind to all," and μισάνθρωπος, the term contrasted with it immediately afterwards, as "unkind" (*Hippocrates*, II, pp. 311; 313 [Loeb Classical Library]; cf. also E. Littré, *Oeuvres complètes d'Hippocrate*, vol. 9, 1861, pp. 205-7: *humain—dur*).

[4] The usual interpretation, "where there is love of man (on the part of the physician), there is also love of the art (on his part)," is refuted by the immediately following words: "For some patients, though conscious that their condition is perilous, recover their health simply through their contentment with the goodness of the physician." The previous sentence then must contain an assertion as to the patients' attitude, and it can only be "love of the art" felt by them in consequence of the doctor's philanthropy, contentment with the goodness of the physician, of which the author is speaking. In his opinion the question of fees discussed in ch. 6 has psychologically important consequences for the recovery of the sick. If the doctor is reasonable in his charges, or even willing to undertake the treatment without compensation, he creates an atmosphere of confidence that is helpful for the restoration of health. In the same spirit the writer, in an earlier chapter (4), has warned against discussing fees at the beginning of the cure because worry regarding fees is "harmful to a troubled patient, particularly if the disease is acute." Fleischer, *op. cit.*, p. 38, has clearly seen that the sequence of the statements made in chapter 6 points to the meaning: "wenn der Arzt Menschenfreund ist, sind die Menschen Freunde seiner Kunst." Nevertheless he tries to save the common interpretation, believing that the term "love of the art" is more often predicated of the representative of the art and that the latter's "wish for knowledge" forms the starting point of the discussion. But the context is quite a different one, as I have tried to show in the text. Nor is it "love of mankind" that is here made "the motive of medical practice." In *Precepts* too the author speaks of "love of man," having warned at the beginning of the chapter against "disdain of man" (ἀνανθρωπίη, "not to be unkind," Jones, *op. cit.*, I, p. 319; *âpreté*, Littré, *op. cit.*, vol. 9, p. 259). "Philanthropy" then appears here in exactly the same contrast as in the treatise *On the Physician*.

"Philanthropy," then, in the two Hippocratic treatises designates a proper behavior toward those with whom the physician comes in contact during treatment; it is viewed as a minor social virtue, so to say. And it was indeed in this way that the word, which later came to have such an exalted connotation, was commonly understood in the classical age and far down into the Hellenistic era.[5] Moreover, according to recent investigations, the book *On the Physician* was composed at the earliest between 350 and 300 B. C. *Precepts* cannot have been written before the first century B. C. or A. D. Neither the one nor the other treatise provides evidence for the ethics of the early Greek physician.[6] I trust that Osler, the scholar, would forgive me for dissenting from him in a question of interpretation and of chronology in which he followed the opinion of his time. I am sure he would not have wished me to put acceptance of authority before acceptance of the results of continued research.

As for Galen and his verdict, far be it from me to deny that even in the classical period there may have been men who dedicated themselves to medicine out of an instinctive compassion for the sufferings of their fellow men. But to assume that such a feeling, made conscious and, under whatever name, elevated to an ideal, could have extended to all mankind, would be the unhistorical projection of later concepts into an age entirely ignorant of them. To be sure, some of the Sophists taught that by nature all human beings—free, slave, and barbarian—are equal. The adherents of the rising enlightenment questioned existing conditions and extolled a natural or divine law of morality over the changing demands of the day. However, the time had not yet come to think in terms of obligations toward humanity.[7]

[5] The word φιλάνθρωπος originally was used only of gods and kings to denote their benevolent attitude toward men, *i. e.* toward their inferiors (or of animals who are friendly toward men). From the second half of the fourth century B. C. it began to be applied more generally and to be interpreted as kindliness and friendliness of individuals in their social contacts (cf. S. Lorenz, *De progressu notionis φιλανθρωπίας*, Diss. Leipzig, 1914, pp. 8 ff.; 14 ff.; 19 ff.; also J. Heinemann, *s. v.* "Humanismus," *Realencyclopädie der classischen Altertumswissenschaft*, Supplementband 5, 1931, col. 298). The contrast φιλάνθρωπος—μισάνθρωπος is usual in the fourth century (Lorenz, p. 25 f.); for the Peripatetic and Stoic interpretations of the term φιλανθρωπία as kindness, which is reflected in the Hippocratic respective treatises, cf. below, notes 19 and 20.

[6] For the late date of *On the Physician* and *Precepts* in general, cf. now Fleischer, *passim*, and below, notes 19, 20.

[7] W. W. Tarn, "Alexander, Cynics and Stoics," *Amer. Journ. Philol., 60*, 1939, p. 44, rightly says that even the cosmopolitanism of the fourth-century Cynics has nothing to do "with any belief in the unity of mankind or a human brotherhood." It is a negative rather than a positive creed (cf. also Heinemann, *loc. cit.*, col. 291). And the same holds true of the advocacy of the equality and kinship of men by Hippias and others (cf. Heine-

Most important, those treatises of the *Corpus Hippocraticum* which were written during the fifth and fourth centuries B. C. and reflect the situation then prevailing, show clearly, I suggest, that even the best among the physicians were not concerned at all with such considerations as Galen imputes to them. Their ethics was not one of the heart or of inner intention. It was shaped by rather different values.

For the early Hippocratic books are concerned exclusively with a body of rules prescribing a certain behavior during the physician's working hours, with medical etiquette, one might say. It is explained how the doctor's office—his *iatreion*—should be set up, how it should or should not be equipped. Bedside manners are discussed, the right way to enter a sick room, to converse with the patient; whether or not to give a prognosis of the outcome of the disease if there is danger of a fatal issue. The surgeon is admonished not to make a show of the application of bandages or of operations, since to do what is proper is preferable to indulging in the mere display of one's dexterity. It is urged that a treatment once started should be completed, and that the physician should not withdraw his help from the sick so as to avoid blame or other unwelcome consequences.[8]

Such injunctions, and many more that could be cited, are dictated by the wish to uphold a certain standard of performance and serve to distinguish the expert from the charlatan. From Homeric times the physician had been an itinerant craftsman; even in the classical age, few physicians stayed in the cities of their birth or took up permanent residence elsewhere. Living here today, there tomorrow, they were not subject to the ordinary social strictures and pressures which result from the integration of the crafts into a community, and which tend to insure the reliability of the workmen. Besides, no medical schools existed; training was not required, everybody was free to practice medicine, the state did not issue

mann, *ibid.*, col. 287), or the "cosmopolitanism" to be found in Democritus and Euripides (cf. W. Nestle, *Vom Mythos zum Logos*, 1942², p. 380 f.). Lorenz' attempt to show that at least in the philosophical language of the fourth century philanthropy had the wider sense which it had later on (*op. cit.*, pp. 35 ff.), is refuted by the testimonies themselves. Still in Aristotle φιλανθρωπία is but an emotion, an instinctive feeling of friendliness and kinship that exists between men as members of the same species, just as animals of the same race feel akin to one another (cf. J. Burnet, *The Ethics of Aristotle*, 1900, *ad* 1155 a 16 ff.; also H. v. Arnim, *Arius Didymus' Abriss der peripatetischen Ethik*, Sitzb. Wien, philos. hist. Kl., 204, No. 3, 1926, p. 107).

[8] For a more detailed picture of the rules of behavior, cf. L. Edelstein, Περὶ ἀέρων *und die Sammlung der Hippokratischen Schriften* (Problemata, 4), 1931, pp. 93 ff. (this will be quoted as *Problemata*). Cf. also W. H. S. Jones, *Hippocrates*, II, Introductory Essay V.

any license. Under these circumstances abuses abounded and went unpunished. They could be prevented only by the individual's decision to make himself responsible before the bar of his own conscience, the conscience of a good craftsman, and this responsibility he assumed by the adoption of a strict etiquette. A great achievement indeed! For not only did the physician thus voluntarily establish a set of values governing sound treatment, he also gave, so to say, a personal pledge of safety to his patients, badly needed in a world that knew of no other protection for them.[9]

Yet at no point does the Hippocratic physician aim farther. Medicine to him is but the proper application of his knowledge to the treatment of diseases. "The medical art," it is maintained in one of the rare expositions of the character of medicine to be found in the *Corpus Hippocraticum*, "has to consider three factors, the disease, the patient, the physician. The physician is the servant of his art, and the patient must cooperate with the doctor in combatting the disease" (*Epidemics*, I, 11). In other words, it is the sole purpose of the good physician to achieve the objective of his art, to save his patient from the threat of death, if possible; to help him, or at least not to harm him, as the famous saying has it (*ibid.*). His ethic consists in doing his task well, in perfecting his skill; it is an ethic of outward achievement rather than of inner intention.[10]

As for the physician's motives in practicing medicine, he was engaged in it in order to make a living. Nor was there any conflict between his pecuniary interests and the exigencies of craftsmanship, as long as he remembered that love of money, of easy success, should not induce him to act without regard for the benefit of the patient, or, to speak with Ruskin, that the good workman rarely thinks first of his pay, and that the knack of getting well paid does not always go with the ability to do the work well. If he learned to forget personal advantage for the sake of doing the right thing, he had, in his opinion, done all that was necessary.[11]

[9] The term used by the true physician in setting himself apart from the charlatan is that of "expertness," which is at the same time "goodness" (ἀνδραγαθικώτερον καὶ τεχνικώτερον); cf. *e. g. Hippocratis Opera*, ed. H. Kuehlewein, II, 1902, pp. 236, 18–237, 1; and in general, *Problemata*, pp. 95-98. For the lack of supervision of the medical art on the part of civil authorities, cf. *ibid.*, p. 89 f.

[10] Here I am concerned only with the ideal of medical practice, as it emerges from the Hippocratic writings. How far reality could fall behind this ideal, how far the ancient physician could deviate from strictly medical considerations in order to attract patients, I have tried to show in *Problemata*, chs. 2 and 3.

[11] That the competent Hippocratic physician was willing to forego momentary success and easy gain, follows *e. g.* from the surgical writings (cf. *Hippocratis Opera*, ed. Kuehlewein, II, pp. 168, 3 ff.; 175, 8 ff.; *Problemata*, pp. 97-99, where I should not have quoted

And society fully approved of such an attitude, as follows with certainty from a memorable passage in the first book of Plato's *Republic* (340 C ff.). The question there debated is whether self-interest is at the root of all human endeavor and therefore also of political activity. Parallels from the various arts, and especially the comparison with medicine, are used in order to decide the issue. The physician in the precise sense of the term is not a money maker or an earner of fees, Socrates holds, but a healer of the sick (341 C), just as it may be said of all the other arts that they were invented not for the sake of personal advantage, but rather for the purpose of performing a service, and most effectively at that. Medicine itself therefore has no concern for the advantage of medicine or of the physician, but only for that of the patient and his bodily welfare (342 C). Like every art, *qua* art, it looks out for the good of that which is its object. And when Socrates is asked rather mockingly: "Is this true of the shepherd also? Does he too have the good of his flock in mind?" (343 A ff.), he answers emphatically: "*qua* shepherd, yes." The fact that he sells the wool and makes money by so doing is not an intrinsic property of the art of shepherding; it belongs to another art, that of money making. For "if we are to consider it 'precisely' medicine produces health but the fee-earning art the pay, and architecture a house but the fee-earning art accompanying it the fee, and so with all the others, each performs its own task and benefits that over which it is set" (346 D). Yet the subsidiary art of fee earning cannot be entirely separated from the art producing health. "Unless pay is added to it," there would be no benefit for the craftsman, and consequently he would be unwilling to go to the trouble of taking care of the troubles of others. This is why everybody expects to make money with his craft, and why pay must be provided by those who benefit from the craft. Otherwise the self-interest of the craftsman would not be satisfied (346 E-347 A).

All the interlocutors in the dialogue agree on this conclusion—and I think none of their contemporaries would have gainsaid their admission: the artisan has fulfilled his duty if he is intent primarily upon the aim of his art—that is, in the case of medicine, upon restoring health to the body—and thinks of his income afterwards. No other obligations are incumbent upon him, no other personal qualities are demanded of him.[12]

however a passage from the later *Precepts*.) The Ruskin quotation I have borrowed from P. Shorey (*Plato, The Republic*, I, [Loeb], *ad* 346 A).

[12] In the Platonic passage referred to Socrates argues according to the beliefs generally held; the passage therefore is especially illuminating for the common attitude towards the crafts. Aristotle too maintains that the function of medicine is that of causing health, not of producing wealth (*Politics*, 1258 a 10 ff.), though by some it is wrongly turned

It is also clear that in the society of the fifth and fourth centuries, medicine is a craft like all the others and in no way differentiated from them. Completely free of any idealization of work as such, and considering it a dire necessity rather than an ennobling activity, the classical age judged all manual labor only by the standard of expertness and performance. What can, properly speaking, be called morality, it found realized in man's private life, and preeminently in his life as a citizen. Even medicine, therefore, remained impervious to moral considerations.[13]

But at this point your patience with my argument should be exhausted, and I must face the objection which no doubt will have been on your minds for some time: how does all this square with the content of the Hippocratic *Oath*? Certainly, the *Oath* prescribes a most refined personal ethics for the physician. It enjoins upon him a life pleasing to gods and men, a life almost saintly and bound by the strictest rules of purity and holiness. It makes him renounce all intentional injustice or mischief. Here a morality of the highest order is infused into medical practice. Have not centuries upon centuries seen in the Hippocratic *Oath* the prototype of all medical ethics?

I trust that I am second to none in my appreciation of this document. Yet its picture of the true physician is evidence not of the thought of the classical era which I have so far considered, but of a movement which started in the latter part of the fourth century B. C.—the time when the *Oath* was composed—and extended through the Hellenistic period down to the time of Galen. Through it, the ethics of the medical craftsman was reshaped in accordance with the various systems of philosophy. The new standards characteristic of the second stage in the development of ancient medical ethics originated in a revaluation of the arts and crafts and in the transformation of the medical craft into a scientific pursuit.

into mere money making, as if this were the aim of medicine (*ibid.*). From the point of view of economic theory, medicine belongs to that "art of acquisition" which deals with exchange, and is "labor for hire" (*μισθαρνία* 1258 b 25).

[13] That the classical age did not know of the concept of "professions" but ranged the artist, the physician, and others with the common workmen or craftsmen (*τεχνῖται*) has been emphasized especially by A. E Zimmern, *The Greek Commonwealth*, 1915[3], pp. 257 ff. For the contrast between the classical attitude toward work and the modern concept of the "nobility of toil," cf. H. Michell, *The Economics of Ancient Greece*, 1940, p. 14. It is because of the facts referred to that I cannot agree with W. Müri's statement that the Hippocratic physician is the "Vertreter des Standes" and as such "in seinem Auftreten nicht mehr ganz frei" (*Arzt und Patient bei Hippokrates*, Beilage z. Jahresber. über d. städt. Gymnasium in Bern, 1936, p. 35). W. A. Heidel's chapter on the medical profession (*Hippocratic Medicine*, 1941, pp. 26-39) also is vitiated by his failure to consider the particular social and moral values prevailing in the world in which the Hippocratic "doctor" practiced.

To speak first of the change in attitude toward the crafts, Aristotle already raised the problem "whether artisans too ought not to have goodness, seeing that they often fall short of their duties through intemperance." But he decided that unlike the slave who is subject to "unlimited servitude," the artisan is subject only to "limited servitude," namely the performance of his particular job, and therefore is obligated only to do his task; his moral goodness is his own affair (*Politics*, 1260 a 36-b2; cf. *Nic. Eth.*, 1105 a 26 ff.). The so-called Pythagoreans of Aristotle's time, however, insisted on the moral implications of workmanship and considered it, if not a "noble toil" in the modern sense of the term, at least a matter of moral concern. They even claimed that "the good" could be achieved especially well through the crafts.[14] In Hellenistic philosophy such a belief became more widespread. Aristotle's successors distinguished the "happy life" and the "good life"—the one presupposing independent means, the other to be led by him who has to have an occupation. In both, man is asked to fulfill the moral law. Finally, the Stoa recognized the acquisition of money through any kind of work as compatible with the moral order and taught that in whatever station in life one may find oneself, one can and must live up to the rules of ethics.[15]

[14] The attitude of the Pythagoreans of the late fourth century toward the crafts I have discussed in *The Hippocratic Oath*, 1943, p. 60. Their views are the more significant since, generally speaking, the fifth and fourth centuries considered the workman not only déclassé, but evinced a definite prejudice against him, contrary to the pre-classical generations, a prejudice to be found in aristocratic and democratic societies alike (cf. Michell, *op. cit.*, pp. 11 ff.; also M. Pohlenz, "Die Lebensformen, Arbeit und Erwerb" in *Der Hellenische Mensch*, ch. XIII, pp. 357 ff. That an exception was made in regard to the physician [*ibid.*, p. 359] is not attested). Among the few who at least maintained that for the poor it is shameful to remain idle rather than to work was the "historical" Socrates (cf. Pohlenz, *ibid.*, p. 358), whose teaching seems to have been important also for the development of a concept of professional ethics. Cf. below, note 39.

[15] The Stoic philosophy of work, as it was formulated by Chrysippus, has been most adequately interpreted by A. Bonhöffer, *Die Ethik des Stoikers Epictet*, 1894, "Exkurs" IV, pp. 233 ff. For the importance of Stoic theories of the second and first centuries A. D. with regard to medical ethics, cf. below, pp. 411 ff. The Peripatetic doctrine concerning the life of the ordinary citizen and the art of acquisition is attested by Stobaeus (*Eclogae*, II, pp. 143, 24 ff.; 149, 21-23, ed. Wachsmuth, and Arnim, *op. cit.*, p. 90). I need not enter here into a discussion of the question whether the system outlined in Stobaeus can be traced altogether to Theophrastus (cf. Arnim, *op. cit.*, pp. 83 ff.), or whether it is influenced at least in part by Stoicism (R. Walzer, *Magna Moralia und Aristotelische Ethik* [Neue Philol. Unters., VII], 1929, p. 191 f.; also O. Regenbogen, *s.v.* "Theophrastos," *Realencycl.*, Suppl. VII, cols. 1492-94). However, it is important to note that the verdict of Aristotle's *Politics* according to which workmanship may be noble or ignoble depending on how much or how little virtue it requires as an accessory (1258 b 38 f.), must be considered an interpolation along the lines of later Peripatetic ethics. For it is in contradiction to Aristotle's general position. That the sentence in question

Such an entirely new appraisal of the crafts surely was facilitated by the fact that virtue or morality was increasingly identified not with the objective content of human actions, but rather with the inner attitude of the human agent. The principal criterion of right or wrong came to be found almost exclusively in the proper use of things, good, bad, or indifferent, rather than in the things themselves.[16]

Now, once it was realized that the craftsman can partake in virtue, the narrow limitations of the old ethics of good craftsmanship were swept aside. The moral issues latent in the pursuit of medicine, which the classical age had either failed to see, or failed to emphasize, were brought out into the open. The so-called deontological writings of the *Corpus Hippocraticum*, the *Oath*, the treatise *On the Physician*, *Precepts*, and *On Decorum*—the three latter composed in Hellenistic times, if not at the beginning of the Christian era—take up the various questions concerning medical ethics and try to give an answer to them from different philosophical points of view.[17]

Does not the practice of medicine involve the physician in the most intimate contact with other human beings? Is he not sometimes called upon to make decisions that reach far beyond the mere application of technical knowledge and skill? In the Hippocratic *Oath* that responsibility which is peculiarly the doctor's is defined in agreement with the way of life instituted by Pythagoras.[18] And what about the patient who is putting himself and "his all" into the hands of the physician? How can he be sure that he may have trust in the doctor, not only in his knowledge,

is an addition has been suspected for other reasons by W. L. Newman, *The Politics of Aristotle*, II, 1887, p. 203; the whole chapter in which the statement occurs differs in many respects from the rest of the text, cf. E. Barker, *The Politics of Aristotle*, 1946, p. 29, note 3.

[16] I should mention at least that at the turn of the fourth to the third century economic theory also began to consider the crafts in a new light. The Ps. Platonic dialogue *Eryxias* discussing the relation between wealth and virtue (393 A) entertains the notion that the crafts are not barter or "limited service," as Aristotle held (cf. above, note 12), but rather are to be classified under possession of wealth, and are thus more noble. The "expert pilot" and the "skilled physician" are the examples adduced (394 E); cf. M. L. W. Laistner, *Greek Economics*, 1923, p. xxviii f. The right, that is, the moral use of such "wealth" of practical skill forms the subject of a considerable part of the conversation reported in this dialogue, the only extant Greek treatise which deals exclusively with economic problems.

[17] The following analysis of the deontological writings which go into minute details of medical practice, is not intended to be exhaustive. I shall simply consider a number of salient features that within the context of my discussion seem to characterize the teaching of these essays.

[18] For the Pythagorean origin of the *Oath* and its date, cf. Edelstein, *The Hippocratic Oath*, especially p. 59 f.

but also in the man himself? Such confidence, according to the book *On the Physician*, can be aroused only if the physician asks himself what he should be like "in regard to his soul." Consequently the author of this treatise—perhaps the oldest known "introduction to medicine" which is posterior to the *Oath* by approximately two or three generations—prescribes for "the soul" of the physician self-control, regularity of habits, justness and fairness, a proper and good behavior, in short, all the virtues of the "gentleman". It is the doctrine of the Aristotelian school, I think, which is here adapted to medicine.[19]

Again, in the *Precepts* and in the book *On Decorum* it is the Stoic outlook which predominates. In the former treatise, gentleness and kind-heartedness are commended. The physician ought to be charitable, especially toward him who is a stranger and in financial straits (ch. 6). In keeping with such a kindly and tolerant attitude the good physician—the "fellow workman," as he is called (ch. 7)—must also be ready at all times to call in another physician as a consultant, and he must not quarrel with his confrères either. Thus, aspects of medical practice neglected in the *Oath* and in the essay *On the Physician*, are elucidated in

[19] Fleischer's dating of the treatise *On the Physician* in the third century (*op. cit.*, p. 56 f.) seems convincing to me. (H. Diller, *Gnomon*, *17*, 1941, p. 30, thinks it unlikely that the book was written after 300 B. C.). The short summary of ethics given by the "Hippocratic" author is usually related to the protreptic-paraenetic literature of the time (cf. J. F. Bensel, "De medico libellus ad codicum fidem recensitus," *Philologus*, *78*, 1922, pp. 102-4; also Müri, *op. cit.*, p. 37), or is linked in addition with the content of introductory manuals on the crafts which became common in the Hellenistic era (Fleischer, *op. cit.*, p. 54 f.). Yet, the right behavior of the physician is defined at least once in the typically Aristotelian manner as "a mean between extremes." ("In appearance let him be of a serious, but not harsh countenance, for surliness is taken for arrogance and unkindness, while a man of uncontrolled laughter and excessive gaiety is considered vulgar"). Details of the precept also fall in line with Peripatetic terminology and doctrine. The concept of surliness (αὐθάδεια) is used here in the restricted and derogatory sense which it came to have in the Peripatetic school (*Magna Moralia*, 1192 b 31; Stobaeus, p. 146, 8, and Walzer, *op. cit.*, p. 161, n. 1). As Bensel already noted (p. 105), the word "vulgar" (φορτικός) is applied to him who indulges in excessive laughter, just as it is in *Nic. Eth.*, 1128 a 3 ff. Self-control (ἐγκράτεια) commended in the Hippocratic essay is treated as one of the main virtues in *Magna Moralia*, in contrast to the genuine Aristotelian ethics (Walzer, *op. cit.*, pp. 98; 106). The use of the term friendliness (φιλάνθρωπος, cf. above, note 3) agrees with that to be found in the Ps. Aristotelian treatise *On Virtues and Vices* (1251 b 35; cf. 1251 b 16; 1250 b 33; also Theophrastus *apud* Stobaeus, *Florilegium*, 3, 50). Finally, the ideal of the "gentleman" (τὸ δὲ ἦθος εἶναι καλὸν καὶ ἀγαθόν) remains valid throughout the history of Peripatetic ethics (Stobaeus, p. 147, 23). It is true, the ethics propounded in the book *On the Physician* is that of common morality, but as one has rightly said, the later Peripatos restored "bourgeois morality" (Walzer, *op. cit.*, p. 188). For the Peripatetic concern with the life of the ordinary citizen, cf. above, note 15. I should add that the Peripatetic flavor of the "Hippocratic" essay speaks for its being dated after 300 B. C.

the light of general moral considerations.[20] The essay *On Decorum*, on the other hand, though abounding in detailed advice on moral situations as they may arise in the course of a treatment, mainly discusses the "wisdom" of the physician. For "between wisdom and medicine there is no gulf; in fact, medicine possesses all the qualities that make for wisdom" (ch. 5), that is, wisdom "applied to life," "directed toward seemliness and good repute" (ch. 1), which should be carefully distinguished from its opposite, from false or sham philosophy. A physician who has the right kind of philosophy is indeed "the equal of a god"; his are all the virtues one can think of (ch. 5). To put it in the technical language of the Stoic school, to which the author of the treatise owes allegiance, the true physician is the peer of the sage.[21]

Perhaps you are astonished at the fact that all these treatises which I have characterized briefly are so strongly imbued with philosophy. And thinking again of the Hippocratic *Oath* you may wonder why the ancient physician could not rest satisfied with the stipulation of his oath which seems to tell him all he has to know about his duties. But the Hippocratic *Oath* originally was a literary manifesto, a programme laid down by one who wished to set matters right in accordance with his own convictions. It was not an oath taken by all physicians, if indeed it was ever taken at all by any one before the end of antiquity.[22] Throughout

[20] *Precepts* is usually held to be Epicurean in origin, cf. now Fleischer, *op. cit.*, pp. 10 ff. However Bensel, *op. cit.*, pp. 96; 98, rightly doubted an influence of Epicurus on any of the deontological writings because Epicurus (Fr. 196 ed. Usener) considers all forms of life which are not directed toward the happy life merely vulgar activities. Epicurean philosophy seems the only Hellenistic system that does not share in the rehabilitation of the crafts (cf. Philodemus, *On Oeconomics*, XXIII, 18 ff.). And indeed, the moral teaching of *Precepts* is Stoic rather than Epicurean. The term φιλανθρωπία, as it is used here (cf. above, note 4), corresponds to the meaning which the word has for the Chrysippean Stoa (φιλικὴ χρῆσις ἀνθρώπων [*Stoicorum Veterum Fragmenta*, III, 292 ed. Arnim]), and in its emphatically moral connotation differs significantly from the more utilitarian recommendation of φιλανθρωπία by the Epicureans (Philodemus, *op. cit.*, XXIV, 29). The injunction on fees laid down in *Precepts* is paralleled by Chrysippus' statements on fees for teaching (*St. V. Fr.*, III, 701). The definition of medicine as "habit" (ἕξις, ch. 2) is that of the Stoa (cf. *e. g.*, *St. V. Fr.*, II, 393; III, 111). That the epistemological theories, too, are Stoic rather than Epicurean, I hope to show elsewhere. The date of *Precepts* has been fixed by Fleischer (*op. cit.*, p. 24) in the first or second century A. D. At any rate, the book must be late Hellenistic.

[21] The Stoic influence on the treatise *On Decorum* is generally recognized (*e. g.* Jones, *Hippocrates*, II, p. 270 f.) and has been traced in detail by Fleischer (*op. cit.*, especially pp. 78; 90: 101 ff.). The latter also dates the essay in the first-second century A. D. A reexamination of the background of the Stoic theories here adopted may perhaps lead to the assumption of a slightly earlier date. But this too I must leave for another investigation.

[22] Scribonius Largus, perhaps the first to mention the *Oath*, maintains that Hippocrates

Hellenistic times and in the first centuries of the Christian era no common agreement existed concerning an ethical code binding for the medical practitioner. As was the case with the medical etiquette of old, so moral stipulations were accepted voluntarily. The writers of whom I have spoken were individuals trying to find out for themselves how to conduct their business in the right way. Just like Osler, they believed they could see their own work in truer perspective by taking "the larger view." And in this endeavor where could they turn for instruction except to philosophy? Ancient religion had no moral or metaphysical message. In the vacuum that resulted from the disappearance of the city state, from the breakdown of the old ideal of civic virtue, philosophy alone could still provide guidance. It was, and it intended to be, not merely the domain of academics, but rather the inspiration of everybody who refused to get lost in doing his daily chores and was in search of standards on which to orientate himself. To be sure, adherence to whatever dogma seemed to the individual nearest to the truth did not yet make him a "philosopher-in-precept," and this holds also for the authors of the deontological writings. Philosophy gave them a *Weltanschauung* which enabled them to solve the task they had set for themselves.[23]

Yet I must turn now to a consideration of the other factor which, as I suggested before, was responsible for the acceptance of a philosophical ethic on the part of the physician: I mean the change of the medical art into medical science. Ever since the fifth and fourth centuries some physicians had interested themselves in the physiological and biological

began medical instruction by administering this vow (*Compositiones*, p. 2, 27 f. ed. Helmreich). This of course is mere conjecture. Such books as Ps. Soranus, *Introductio ad medicinam* (V. Rose, *Anecdota Graeca et Graeco-Latina*, II, 1870) speak of a medical oath and of the oath of Hippocrates (pp. 244, 27; 245, 16 f.). In the fourth century A. D. Libanius (Κατὰ ἰατροῦ φαρμακέως, 9) refers to "the oath taken by physicians when entering upon the practice of their profession" (cf. R. Pack, "Note on a 'Progymnasma' of Libanius," *Amer. Jour. Philol.*, *69*, 1948, p. 300), and many such oaths were in fact current (Pack, *ibid.*). That any of them were obligatory, cannot be proved. According to Ps. Oribasius, *Comment. in Aphorismos Hippocratis*, ed. Basileae, 1535, p. 7, the *Oath* was the first book to be read by the beginner, cf. K. Deichgräber, "Die ärztliche Standesethik des hippokratischen Eides," *Quellen u. Stud. z. Gesch d. Naturwiss. u. d. Medizin*, III, *2*, 1932, p. 93, n. 1, and the material there given on other oaths, p. 95, n. 33; p. 97, n. 42.

[23] It is usual to designate the ethics of the *Oath* as "*Berufsethos*" (cf. *e.g.* Pohlenz, *op. cit.*, p. 334); Müri uses this term in his analysis of the structure of the ideal physician, as it is given in the deontological writings (*op. cit.*, p. 39). In a loose sense, such a characterization is surely not unjustified. But it is important to note that none of the "Hippocratic" treatises here discussed considers the obligations of the physician as inherent in his medical task. They rather adapt philosophical ethics to medicine, cf. below, p. 408.

theories of the philosophers and had made use of them in their own work. Thereby they created scientific medicine, if I may use this term to designate the type of medicine that went beyond the practical application of traditional knowledge and demanded research into the nature of the body and of all the factors that may have a bearing upon it.[24] While throughout antiquity merely technical skill and empirical proficiency constituted the equipment of the average physician who as a craftsman was trained through apprenticeship with another physician-craftsman, the medical "scientists" studied philosophy. In the Hellenistic era they belonged to the various medical sects for which the unity of philosophy and medicine was axiomatic. And the new spirit in which medicine was thus approached soon made itself felt also in medical practice. The ethics of these physicians became identical with that of the philosophical school to which they professed allegiance as scientists.

The first testimony to this effect is perhaps the Hippocratic *Law* written at approximately the same time as the *Oath*. Many physicians, the author of the short and almost enigmatic treatise holds, are physicians "by repute"; very few are physicians "in reality." Rather have the majority, "like the supernumeraries in tragedies," merely "the appearance, dress, and mask of an actor without being actors" (ch. 1). He who wishes to win the reputation of being a physician "not only in name, but in deed," must go through a proper training, that is, a philosophical training. Its result will also be "cheerfulness" and "joyousness," instead of "cowardice" and "rashness," which betray "helplessness" and "want of knowledge" (ch. 4). This is the Democritean ideal of theoretical speculation, according to which the man of true insight is at the same time necessarily the man of truly good character.[25]

[24] For a more detailed interpretation of "scientific" medicine, cf. L. Edelstein, "The Relation of Ancient Philosophy to Medicine," *Bull. Hist. Med.*, *26*, 1952, pp. 301 ff.

[25] In the interpretation of the *Law* I follow Wilamowitz, *Hermes*, *54*, 1919, pp. 46 ff. F. Müller's attempt (*Hermes*, *75*, 1940, pp. 39 ff.) to date the *Law* in the fifth century B. C. to me is unconvincing. As Fleischer says (*op. cit.*, p. 46), it is perhaps impossible to date the essay exactly, because many of its concepts became common stock in the discussion of moral problems. Yet the book cannot be earlier than Democritus, some of whose central ethical concepts are here presupposed, as Wilamowitz has shown. Nor will it be much later than the end of the fourth century, since unalloyed Democritean teaching did not long survive. Jones (*Hippocrates*, II, p. 275) connects the *Law* with the doctrine of secret medical societies, which he thinks might have existed in Greece, since at the end of the *Law* it is proclaimed: "Holy things are shown to holy men; to the profane it is not lawful to show them until these have been initiated into the rites of knowledge." But the description of "knowledge" through the metaphor of the mysteries is not uncommon with Greek philosophers (cf. E. Frank, *Knowledge, Will and Belief*, 1955, pp. 63 f.; 67). Wilamowitz, *op. cit.*, p. 49, already compared *ἱερὰ πρήγματα*

While here the ethics of the scientific physician still remains vague and shadowy, it manifests itself in its fully developed form in the doctrine of the Hellenistic Empiricists whose sect was of the sceptic persuasion. The empirical physician therefore, like all sceptic philosophers, accepts the established rules of life which, though by no means representing absolute truth, have the sanction of probability. In accordance with the common aim of men, he practices medicine for the sake of reputation or of money, of neither of which he desires to have too much or too little, but just as much as is adequate and guarantees peace of mind. In his character and behavior he evinces tranquillity and gentleness. In his work he is not given to unnecessary talk, but prefers action; talking much or talking big is the habit of those who, unlike the empiricist and sceptic, believe in speculative theories. In his writings and in his research he is truthful, not intent on winning an argument *à tout prix*, or on displaying his conceit. On the whole, then, he follows in the wake of the day, relying on indubitable data of sense perception and experience; living thus, he lives like Hippocrates himself who, in the opinion of the sceptics, had of course been a sceptic, and as a sceptic had equalled the fame of Asclepius.[26]

Evidence on the ethical teaching of the early dogmatic sects is almost entirely lacking. A happy chance has preserved at least one testimony which bears witness to the preoccupation of Erasistratus with medical ethics. "Most fortunate indeed," he says, "wherever it happens that the physician is both, perfect in his art and most excellent in his moral conduct. But if one of the two should have to be missing, then it is better to be a good man devoid of learning than to be a perfect practitioner of bad moral conduct, and an untrustworthy man—if indeed it is true that good morals compensate for what is missing in art, while bad morals can corrupt and confound even perfect art." [27] Further details of the de-

in the *Law* with the *ἱερὸν πνεῦμα* that, according to Democritus, inspires the poet. Jones' translation of *ἠδελφισμένος* (*Precepts*, ch. 5) as "one made a brother" (of a secret society) involves an unnecessary change of the best manuscript tradition *ἠδελφισμένως*, for the meaning of which cf. Fleischer, *op. cit.*, p. 36.

[26] Cf. K. Deichgräber, *Die griechische Empirikerschule*, 1930, p. 322 f. Especially important is the statement, p. 82, 29 ff.: *οἷός δ' ἐστι καθ' ὅλον τὸν βίον ὁ σκεπτικός, τοιοῦτός ἐστι περὶ τὴν ἰατρικὴν ὁ ἐμπειρικός*. Ch. 11 of Galen's *Subfiguratio Empirica* treats "De moribus et dictis que debent esse in empericis." For the sceptics' conformance with the established laws, cf. *e. g.* M. M. Patrick, *The Greek Sceptics*, 1929, p. 51.

[27] Cf. Ps. Soranus, *Introductio ad medicinam* (Rose, *Anecdota Graeca et Graeco-Latina*, II, p. 244, 16-23): "Disciplinarum autem ceterarum minime sit expers [sc. medicus], sed et circa mores habeat diligentiam. iuxta enim Erasistratum felicissimum quidem est ubi utraeque res fuerint, uti et in arte sit perfectus et moribus sit optimus. si autem unum de duobus defuerit, melius est virum esse bonum absque doctrina quam artificem perfectum mores habentem malos et improbum esse. modesti si quidem mores quod in

ontology of the Herophilean and Erasistratean sects may be contained in the writings of Galen, the great systematizer of medicine. At any rate, his little essay *That the Best Physician also is a Philosopher* gives an exhaustive account of later dogmatic ethics. It can be summed up in the demand that the physician should be contemptuous of money, interested in his work, self-controlled and just. Once he is in possession of these basic virtues, he will have all the others at his command as well (ch. 3). And how is such moral eminence to be achieved? Like Galen, the true physician must become a philosopher himself, an adherent of Plato, or rather of the Platonism of Galen's time, which was fused with Aristotelianism and Stoicism.[28]

With this short description of Galen's views I have come to the end of my analysis of the various attitudes taken by the scientist-physicians and by the craftsmen-physicians during the second stage in the development of medical ethics. The important consequence of the movement which I have described hardly needs reemphasis. The morality of outward performance characteristic of the classical era was now supplemented by a morality of inner intention. The physician—whether as an amateur philosopher or as a philosopher in his own right—had learned to regard his patient not only as the object of his art, but also as a fellowman to whom he owed more than knowledge alone, however great, can provide. He had learned to face him not only as a master of techniques, but also as a virtuoso in moral conduct.

Can one then go one step further and claim that between the end of the fourth century B. C. and the second century A. D. medicine had been elevated to the rank of the most philanthropic art? Have I answered also the specific question raised at the very beginning of my discussion? Have I uncovered the origin of the humanism which Osler admired in Greek medicine? It may almost seem so. For surely, in Galen's opinion,

arte deest honestate repensare videntur, culpa autem morum artem perfectam corrumpere atque improbare potest." The *Introductio* which forms part of a collection of *Quaestiones Medicinales* (cf. Rose, *op. cit.*, p. 169), though hardly by Soranus, is based on good ancient sources. There is no reason to doubt the authenticity of the quotation from Erasistratus.

[28] E. Wenkebach, "Der hippokratische Arzt als das Ideal Galens," *Quell. u. Stud. z. Gesch. d. Nat. u. d. Med.*, III, 1932-33, p. 372 f., stresses the influence of Hippocratic medicine on Galen's ideal as outlined in the treatise referred to. But although Galen identifies his philosophy with that of Hippocrates, one must remember that for him, Hippocrates and Plato agree in almost all points. Besides, he says expressly (ch. 3) that philosophy is indispensable for medical practice, just as it is for medical theory: in addition to logic and physics, the physician must take up the third part of philosophy, namely ethics.

the physician who accepts his philosophy will be led to practice medicine out of love of humanity, the motive which Galen is willing to attribute even to Hippocrates, as I mentioned before. And since nowhere else, neither in the deontological writings of the *Corpus Hippocraticum*, nor in the teaching of any of the other medical sects, philanthropy is mentioned as the inspiration of the doctor, one should conclude that it was dogmatic medicine, as formulated by Galen or maybe by one of his predecessors, which gave rise to medical humanism.[29]

But Galen's own appraisal of the possible motivations of medical practice, I am afraid, makes it impossible to rest satisfied as yet. For as he says (*De Placitis*, p. 763 f. ed. Müller) on the authority of the same passage in Plato's *Republic* to which I referred in my analysis of classical medicine, the physician's particular job is to take care of the health of the body, although it may be for a variety of reasons that he practices medicine. Some physicians engage in it for the sake of money, some for the sake of exemption from public duties—physicians in Galen's time were sometimes granted such privileges[30]—some few for love of mankind, just as still others for glory or honor. In so far as they are able to bring health to their patients, all of them are named physicians; in so far as they do what they do for different reasons, the one is called a "philanthropist," the other a lover of honor, the third a lover of glory, the fourth a lover of money. Therefore, Galen continues (p. 764 f.), the aim of the physician as physician is not glory or money, as the Empiricist Menodotus claimed; this may have been true of himself, but others in

[29] On the evidence of Galen's claim that "Diocles practiced medicine out of love of mankind" (cf. above, p. 392), K. Deichgräber, *Professio medici, Zum Vorwort des Scribonius Largus*, Abh. Akad. Mainz, Geistes- u. Sozialwiss. Klasse, 1950, No. 9), tentatively suggests that the association between medicine and philanthropy may be due to the influence of the Peripatos (p. 866, n. 1). Yet, for Aristotle, and even for Theophrastus, φιλανθρωπία is not "love of humanity" (cf. above, notes 7 and 19). As late as in Stobaeus' report on Peripatetic ethics the κοινὴ φιλανθρωπία, as it is called in contradistinction to the φιλία among friends (II, 121, 22; 120, 20), is not represented as one of the main virtues (cf. Heinemann, *op. cit.*, col. 298); it rather is a natural sympathy that prompts men to help other men in dire need and not think of themselves only (p. 120, 20–121, 22). Much as the Peripatos contributed to the Hellenistic concept of the unity of men, it was the Stoa that stressed the rational duties inherent in the idea of humanity (M. Pohlenz, *Die Stoa*, I, 1948, pp. 136-39). And even in the Stoic school justice was at first the obligation stressed in connection with cosmopolitanism; love of mankind came to be fully recognized only in the first century A. D. (Pohlenz, *ibid.*, p. 315; Bonhöffer, *op. cit.*, p. 106). I should be inclined, therefore, to believe that philanthropy became integrated into the ethical teaching of the dogmatic physicians not long before Galen's time, if indeed it was not Galen himself who accepted the ideal of philanthropy in accordance with his Stoic leanings.

[30] Cf. below, p. 416.

the past surely had different aims in mind. The motive of glory or money or of philanthropy is a matter of personal choice; it has no intrinsic connection with the pursuit of medicine.[31] For in regard to every craft it is necessary to distinguish between its common characteristics and those which belong to the individual practicing it. Failure to make this distinction is bad logic, irreconcilable with the tenets of Plato and Hippocrates alike (p. 765 f.).

This argumentation of Galen, so utterly devoid of ethical overtones or of any feeling of moral indignation, shows clearly that in his opinion philanthropy is not indissolubly joined with the practice of medicine. It is, so to say, a superfluity of riches on the part of the physician. What is expected of him is only that he should be an expert in medicine. However, no rules of behavior can be stated absolutely. For Galen as well as for all the other moralizing physicians medical ethics remains relative to the respective philosophies to which they adhere at their own discretion. Whoever differs from their views is a bad philosopher, to be sure, but he is not necessarily a bad physician or a bad man. Various motivations of medical practice, therefore, are quite legitimate; no one single or definite virtue is enjoined upon the doctor by his task. From the point of view of medicine, his specific morality is incidental rather than essential.

Does this amount to the admission that the ancients never identified medicine with love of humanity? That they did not know of any strictly professional medical ethics dictated by the aim of medicine itself? By no means. Almost a hundred years before Galen there must have been a clear realization of a medical humanism inherent in the task of the physician. Scribonius Largus, a writer of the early first century A. D., speaks of it as something quite self-evident to himself and his readers. It still remains for me to elicit the full meaning of the doctrine in question from the few sentences in which Scribonius alludes to it, to determine its historical antecedents, and to sketch its later fate.[32]

Scribonius has embodied his views on the moral conduct of the physician in the preface to his book *On Remedies* in which he wishes to demonstrate the importance of treatment by drugs. Why is it, he asks

[31] In *That the Best Physician also is a Philosopher* Galen once speaks of medicine as a τέχνη οὕτω φιλάνθρωπος (ch. 2). The detailed refutation of Menodotus shows that by the term in question Galen can only mean that medicine is "philanthropic" because it removes the sufferings of men.

[32] The fact that Scribonius upholds a humanistic ethics has often been noticed, of course; cf. *e. g.* J. Hirschberg, *Vorlesungen über hippokratische Heilkunde*, 1922, p. 35. A detailed analysis of Scribonius' views has recently been given by K. Deichgräber, *op. cit.* (cf. above, note 29).

(p. 2, 8 ed. Helmreich), that his colleagues refrain from the application of drugs? Are they unfamiliar with them? This would be just reason for accusing them of negligence. Or are they aware of the usefulness of drugs, yet deny their use to others? If so, they are even more culpable, "because they burn with envy, an evil that must be despised by all men, and especially by the physician who is himself despised by gods and men if his heart is not full of sympathy (*misericordiae*) and humaneness (*humanitatis*) in accordance with the will (*voluntatem*) of medicine itself" (p. 2, 15-19).

But the sympathy and humaneness "willed" by medicine imply more than that the physician should not withhold his knowledge from his patients. The true physician, Scribonius continues, "is not allowed to harm anybody, not even the enemies of the state (*hostibus*). He may fight against them with every means as a soldier (*miles*) or as a good citizen (*vir bonus*), should this be demanded of him. [As a physician, he cannot and must not fight or harm them], since medicine does not judge men by their circumstances in life (*fortuna*), nor by their character (*personis*). Rather does medicine promise (*pollicetur*) her succor in equal measure to all who implore her help, and she professes (*profitetur*) never to be injurious to anyone" (p. 2, 19-26). For, as Scribonius reiterates in conclusion, "medicine is the knowledge of healing, not of hurting. If she does not try in every way to help the sick with all means at her disposal, she fails to offer to men the sympathy she promises" (*hominibus quam pollicetur misericordiam*, p. 3, 5-8).

Obviously, according to Scribonius, the sympathy and humaneness required of the physician are due to everybody in equal measure. Humaneness (*humanitas*) for him is not merely a friendliness of behavior, it is a "proficiency and benevolence toward all men without distinction," it truly is "love of mankind," as *humanitas* was defined at that time in correspondence with the then prevailing meaning of the Greek word *φιλανθρωπία*.[33] Besides, sympathy and love of humanity constitute positive rules, and obedience to them supersedes all other allegiances that the doctor may have as a good citizen or as a soldier. They are the special obligation of the physician which he cannot violate under any circumstances. Most important, the one and only right standard of conduct is enforced upon him by medicine itself, just as is the standard of adequate

[33] I am quoting the definition of *humanitas* which Gellius gives (*Noctes Atticae*, XIII, 17) as the one commonly accepted. Heinemann, *Realencycl.*, col. 306, has shown that in the literature of the first century A. D. the words *humanitas* and *humanus* and their Greek equivalents are used in the sense attested by Gellius.

knowledge. Unless he knows all that he ought to know and makes use of it for the benefit of the sick, he fails in his duty. He is as remiss, or even more so, if he does not fulfill his specific moral responsibility. Here, the ethics of inner intention and that of outward performance have become an inseparable unity; both are derived from the task to be achieved, from the "will" and "promise" of medicine itself, both are equally essential for medicine and the physician.

It is hardly by chance therefore that Scribonius calls medicine not merely an "art" or a "science," but a "profession" (*professio*, p. 2, 18; 27). This word, in the language of his time, was applied to workmanship in preference to the older and morally indefinite terms, in order to emphasize the ethical connotations of work, the idea of an obligation or a duty on the part of those engaged in the arts and crafts. It approximates most closely the Christian concept of "vocation" or "calling," except of course that for him who has been "called" to do a job his obligations are ordained by God, while for the member of an ancient profession his duties result from his own understanding of the nature of his profession.[34] But this difference of the ancient ethos of work from that of later ages does not lessen the strict validity of the rules to be observed. The true physician, Scribonius says, like a soldier, is "bound in lawful obedience to medicine by his military oath" (p. 2, 20-21). On the other hand, he who acts in a way unbecoming to a physician is a deserter, as it were; he is "deservedly despised by gods and men" (*diis hominibusque invisus merito*, ch. 199; cf. p. 2, 19: *diis et hominibus invisi esse debent*); he has "against the law transgressed the proper boundaries of the profession" (ch. 199).[35] He is, one might say, disqualified as a physician, for it is no longer up to him how he should conduct himself.

That such an ideal of medical humanism is foreign to the spirit of Hippocratic ethics, Scribonius admits himself. Even in the *Oath* which in his opinion is the work of Hippocrates, the "founder of our profession"

[34] M. Weber, "Die protestantische Ethik und der Geist des Kapitalismus," *Ges. Aufsätze z. Religionssoziologie*, I, 1920, analyzing the meaning of the term *Beruf* or "calling" has pointed up its difference from the classical concept of work (p. 63). He has also noted, however, that in Latin, such words as *officium* (cf. also below, n. 42), *munus*, and *professio* (originally denoting, it seems, the duty of making a tax declaration) came to assume "eine unserem Wort 'Beruf' in jeder Hinsicht ziemlich ähnliche Gesamtbedeutung . . . natürlich durchaus diesseitig, ohne jede religiöse Färbung" (p. 63, n. 1).

[35] The simile of fighting and military service used by Scribonius is quite common in Latin philosophy (cf. *e.g.* Pohlenz, *Die Stoa*, I, 1948, p. 314); it also occurs in the language of the mysteries so often applied to knowledge in general, cf. above, note 25, and *Amer. Journ. Philol.*, *72*, 1951, p. 430, n. 6.

(p. 2, 27), he can find his views at best by implication. For, as he puts it, Hippocrates forbids the physician to give an abortive remedy to a woman, " and thereby has gone a long way toward preparing the mind of the learners for the love of humanity. For he who thinks it to be a crime to injure future life still in doubt, how much more criminal must he judge it to hurt a full grown human being " (p. 2, 30-3, 2)?[36] But if Scribonius' concept of medical ethics goes in fact beyond the demands of the classical period, if it is distinct from the teaching of all the deontological treatises and all the medical sects I have discussed, where and when did it originate?

That Scribonius himself formulated the code of behavior which he upholds, I cannot believe; for he does not argue about it, nor defend it, he simply presupposes it and takes it for granted, as I pointed out before. In addition, reading his account one cannot fail to be reminded of the doctrine concerning human life and human obligations which characterize the Stoic philosophy of humanism evolved in the second century B. C. by Panaetius and embedded in Cicero's book *On Duties*, the manual of all later humanism, ancient and Christian, secular and religious alike. Here if anywhere in antiquity, a programme of a professional ethics was firmly established.[37]

For first of all, Panaetius, as Cicero represents him, accepted and even enhanced the more positive evaluation of the arts and crafts which earlier philosophers had made of them, granting that virtue has its place even among craftsmen. Medicine, next to architecture and education, is expressly mentioned and singled out by Cicero as socially acceptable, because it demands a high degree of insight and contributes something useful to life; it is therefore, he says, a " proper " (*honestae*) occupation for those for whose station in life it is fitting (*On Duties*, I, 42, 151).[38]

[36] Scribonius concludes that Hippocrates apparently " thought it of great value for everyone to preserve the name and honor of medicine in purity and holiness, conducting himself after her design " (p. 3, 2-5). Thereby he translates into the language of his professional ethics the Pythagorean concepts of purity and holiness used in the *Oath* with reference to the art which the physician practices and to the life which he leads (ἁγνῶς δὲ καὶ ὁσίως διατηρήσω βίον ἐμὸν καὶ τέχνην ἐμήν). It is unwarranted, I think, to infer from this adaptation of the famous sentence in the *Oath* that Scribonius has a " religiös getönte Humanität " (Deichgräber, *op. cit.* [cf. above, note 29], p. 861).

[37] R. Reitzenstein, *Werden und Wesen der Humanität im Altertum*, 1907, p. 15, already suggested that the philosophy of Panaetius gave rise to a " *Standesethik* "; cf. also Heinemann, *op. cit.*, col. 294.

[38] In accordance with their own aristocratic prejudice and with the prejudice of the society in which they live, Panaetius and Cicero consider political and public activities the only ones proper for a gentleman (cf. M. Pohlenz, " Antikes Führertum," *Neue Wege*

But Panaetius' positive appreciation of the various occupations implies much more than a general approval of the activities indispensable for man's welfare and for civilization. Although philosophically speaking virtue is one and the same, and it is impossible to have any one virtue without having all of them (II, 10, 35 [Panaetius]), different aspects of this one and indivisible virtue in which all men share come to the fore in the various pursuits of human life and have to be practiced without fail. To give an example, the judge must always adhere to the truth, while the lawyer may sometimes defend the probable, even if this may not quite coincide with the truth (II, 14, 51 [Panaetius]). Obviously, here man's particular task imposes upon him certain obligations; each one has its own morality, from which there is no exception. For the judge is not permitted to indulge in any bias or favoritism out of friendship; while sitting as a judge, he is not supposed to act as a friend (III, 10, 43).[89]

If one asks why this should be so, the answer is that the individual who practices any occupation is playing a certain role. It may be one derived from chance circumstances, the place in society to which he is born and by which his inclination toward a particular career and also his opportunities for it are conditioned; it may be one which he assumes through his own free decision, through a deliberate choice of an occupation (I, 32, 115 ff.). But whether the role be inherited or chosen, one must act one's part as the role demands it, just as in the two roles which nature, in addition, has assigned to everyone—as a human being who has the same duties as all other human beings, and as an individual endowed with specific intellectual and emotional gifts (I, 30, 107 ff.)—one must live up to "the lines one has to speak." It is therefore that the judge must always utter the truth, that he is not permitted to listen to the voice of

z. Antike, 2. Reihe, H. 3, 1934, p. 83 f.). The views of the older Stoics in this respect had been more liberal; cf. above, note 15.

[89] Panaetius surely was not the first to discuss the particular virtues pertaining to an occupation. His teacher, Antipater (*St. V. Fr.*, III, 61 f.), had engaged in a famous dispute about "business ethics" with his predecessor, Diogenes (*St. V. Fr.*, III, 49). The casuistry of the old Stoa insists on the fact that for the physician it is permissible to lie (III, 513), that neither he, nor the judge is allowed to indulge in commiseration "with the suffering of his neighbors" (III, 451). The beginnings of such a "differenzierende Ethik" may be traced even to the Sophists, and especially to the Xenophontian Socrates (cf. E. Norden, in *Hermes*, *40*, 1905, pp. 521 ff.; F. Wehrli, "Ethik und Medizin," *Mus. Helveticum*, *8*, 1951, p. 45 f.). However, the recognition that virtuous action may differ with different people and different positions in life is still a far cry from the acknowledgement of professional virtues. At any rate, they seem not to have been appraised systematically before Panaetius.

friendship, "for he lays down the role (or mask) of the friend when putting on that of the judge" (III, 10, 43). What is fitting for the one, is not so for the other.[40]

Now is this not fundamentally the way in which Scribonius views medicine and the obligations imposed by it? The role which the physician plays in the tragedy, or comedy, of life demands of him the virtue of humaneness, sympathy, or commiseration. His lines are to be spoken in this spirit. Consequently as little as Cicero's judge in his professional activity can ever be in a situation justifying his failure to cling to the truth—though there are other professions in which this virtue may sometimes come second—so Scribonius' physician must never neglect love of humanity and all the duties it entails. Certainly, commiseration and humaneness are not demanded of him alone; but they are his professional virtues, just as truthfulness is the distinctive virtue of him who sits in court notwithstanding the fact that it is required of everybody. Only when he steps out of his role, so to say, is the member of a profession free to follow another code of morals. The physician may take on the role of a citizen or of a soldier, and in that case he may fight and kill the enemy. Yet as long as he acts his professional part, he has to stick to his cue. Otherwise, he would cease to be a physician, in the same manner in which the judge who indulges in favoritism ceases to be the representative of justice.

The similarity between Scribonius' concept of a profession and that of Cicero, in my opinion, is so striking that the former can hardly be thought to be independent of the latter.[41] Perhaps Scribonius consulted the same sources of which Cicero made use and found his inspiration there. Perhaps he drew from a lost treatise on medicine and its professional obligations influenced by Panaetius' Stoicism; treatises on other professions and their duties are known to have been written at the turn of the first century B. C. to the first century A. D. In whichever way Scribonius learned of the views of his predecessors, the principal tenets

[40] The discussion summarized in the text makes it clear that, in Cicero's view, each "profession" or career has its own ethos. The example of the judge is obviously used as particularly appropriate to Roman conditions; cf. also above, note 38.

[41] Deichgräber (*op. cit.*, pp. 865 ff.) assumes that the ethics outlined by Scribonius is original with him, though with reference to ch. 199 he admits that "die Frage der professio der Medizin hat [for Scribonius] allgemeineren Charakter" (p. 859). This in itself is an indication, it seems, that he is merely applying to medicine a general theory of professional behavior. The physician to the emperor Claudius must surely have been familiar with Stoicism. He was the freer to accept Panaetius' teaching which did not influence the established medical sects, because he himself apparently did not belong to any of the schools of his age (Deichgräber, p. 865 f.).

of the creed which his book attests for the first time must have their roots in the Stoic humanism transmitted through Cicero.[42]

As for the later history of this strictly professional kind of ethics, few testimonies are extant. The novelist Apuleius refers to certain physicians who hold it unfitting for "the medical sect" to be guilty of anyone's death, because they have learned that "medicine is sought out not for the purpose of destroying men but rather for that of saving them" (*Metamorphoses*, X, 11). His contemporary, Soranus, the great rival of Galen, mentions some colleagues of his who regard it as their duty to banish abortives not only because Hippocrates said one should do so, but also "because it is the specific task of medicine to guard and preserve what has been engendered by nature" (*Gynaecology*, I, 60).[43] While these

[42] E. Norden has drawn attention to the specific literature "De officiis judicis" which starts to appear around the middle of the first century A. D. (*Hermes*, *40*, 1905, p. 512 f.). It differs from the usual type of "Introductions" to any given art in that here only the moral obligations of the judge are considered. With Cicero and his contemporaries the word *officium* comes to mean not only the objective task of an art, but also, if not preeminently, the duties incumbent upon the artist (cf. E. Bernert, *De vi atque usu vocabuli officii*, Diss. Breslau, 1930, pp. 25 ff.; 29 ff.; and above, note 34). Gellius mentions books on the juridical "office" in both Latin and Greek (*Noctes Atticae*, XIV, 2, 1). Panaetius and his pupils, Posidonius and Hecaton, wrote Περὶ τοῦ καθήκοντος; other Stoic books "On Duties" are known from Seneca (cf. H. Gomoll, *Der stoische Philosoph Hekaton*, 1933, pp. 27 ff.); the work of the artisan is considered as an *officium*, as a moral obligation, by Cicero (*De officiis*, I, 7, 22) as well as by Seneca (*De beneficiis*, III, 18, 1; cf. Gomoll, p. 77 f.). In the Stoic treatises just referred to the obligations toward one's country and toward other groups to which the individual may belong were set forth, or they were defined according to certain virtues. For the importance of philanthropy in late Stoic ethics, cf. above, note 29; below, note 45. The details of the general theory of professions as it was developed in the Middle Stoa I hope to discuss in an investigation of Stoic ethics. That the works on duties began to pay attention also to medicine is the more likely since physicians by this time were granted citizenship, and medicine was practiced even by free-born Romans (cf. K. H. Below, *Der Arzt im römischen Recht*, Münch. Beitr. z. Papyrusforschung u. antiken Rechtsgeschichte, *37*, 1953, p. 20 f.).

[43] I should mention that Galen's refutation of Menodotus (cf. above, p. 407 f.) may be an indirect reflection of the fight about the new professional ethics. Menodotus was a pupil of the Sceptic Antiochus (cf. Deichgräber, *Empirikerschule*, p. 212), who leaned toward Stoicism and deviated in many respects from his school. Possibly his assertion that the physician's aim is money or honor was intended as the antithesis of the ethos of philanthropy. Also, Seneca's contention that men owe more to the physician than financial remuneration (*De beneficiis*, VI, 16, 1) may be a reference to physicians of the type Scribonius depicts, although elsewhere he acknowledges the fact that medical knowledge and moral goodness do not always go together (*Ep.* 87, 17). Finally, could not Pliny's notorious diatribe against the physicians best be understood if his judgment was determined by the humanistic ideal? For Pliny is careful in mentioning that all the crimes committed by physicians should be attributed to the individuals and not to the medical art (XXIX, 21 f.).

passing remarks do hardly more than rephrase Scribonius' formulations, a poem composed by an otherwise unknown Stoic pholosopher, Sarapion —he too lived in the second century A. D.—shows, I think, a certain evolution of the original theory. For in this poem, entitled *On the Eternal Duties of the Physician*, and inscribed on stone in the Athenian temple of Asclepius, the god of medicine and of the physicians, the god who prided himself most of all on his virtue of philanthropy, the "eternal duties" of the doctor are said to be: "First to heal his mind and to give assistance to himself before giving it to anyone [else]" and to "cure with moral courage and with the proper moral attitude." [44] Then "he would be like god savior equally of slaves, of paupers, of rich men, of princes, and to all a brother, such help he would give. For we are all brothers. Therefore he would not hate anyone, nor would he harbor envy in his mind." Here, the thought of Scribonius, the philosophy advocated by Cicero, is restated in the language of late Stoicism, in its new terms of human brotherhood, which indeed foreshadow the categories of Christian medical ethics.[45]

Finally the quintessence of pagan medical humanism was expressed by Libanius in a moving speech which medicine addresses to the young

[44] Cf. P. L. Maas and James H. Oliver, "An Ancient Poem on the Duties of a Physician," *Bull. Hist. Med.*, *7*, 1939, pp. 315 ff. The translation is Oliver's, whose emendation [αἰ]ώνια I also accept against Maas' [Παι]ώνια (cf. p. 320, n. 6).

[45] Maas in his commentary (*loc. cit.*, p. 323) says, *ad vv.* 12 ff.: "color Epicteteus, ne dicam Christianus." It seems to me that the poem can be adequately understood within the confines of late Stoicism that so often approximates Christian ethics. For the brotherhood of men cf. *e. g.* Epictetus, I, 13, 3 f.; Seneca, *Ep.*, 95, 52: "natura nos cognatos edidit . . . haec nobis amorem indidit mutuum." Sarapion enumerating man's various stations in life spells out Scribonius' claim that medicine does not judge men by their circumstances in life or by their personality. Both proscribe envy (Sarapion: [ϛᾶλος]; Scribonius: *invidentia*). While Sarapion derives from the brotherhood of men the duty not to hate anyone, Scribonius expresses the same thought positively through his concept of *humanitas*. (In the lines of the poem which I have omitted there are certain parallels with the deontological writings of the *Corpus Hippocraticum* noted by Oliver, p. 318, notes 2, 3; p. 320, note 4). Later Christian passages closely resembling the main drift of Sarapion's poem are to be found *e. g.* in L. C. MacKinney, "Medical Ethics and Etiquette in the Early Middle Ages," *Bull. Hist. Med.*, *26*, 1952, pp. 6; 11 f.; 27. Only one feature sharply distinguishes pagan humanism from the Christian attitude and that of the nineteenth-century humanist reformers (for whom cf. I. Galdston, "Humanism and Public Health," *Bull. Hist. Med.*, *8*, 1940, pp. 1032 ff.): pagan ethics lacks any recognition of social responsibilities on the part of the physician. Although sickness was understood in rational terms, and some diseases were traced to social conditions, even the gospel of brotherly love took account only of the relationship between the individual doctor and the individual patient. Immediate help rather than long-range improvement remained the watchword. In general, cf. O. Temkin in *Social Medicine: Its Derivations and Objectives*, ed. I. Galdston, 1949, pp. 3 ff.

physician starting out on his career: "You desired to be one of the healers (of sickness), you had the benefit of having (good) teachers. Now, practice your art faithfully. Be reliable; cultivate love of man; if you are called to your patient, hasten to go; when you enter the sickroom, apply all your mental ability to the case at hand; share in the pain of those who suffer; rejoice with those who have found relief; consider yourself a partner in the disease; muster all you know for the fight to be fought; consider yourself to be of your contemporaries the brother, of those who are your elders the son, of those who are younger the father. And if anyone of them neglects his own affairs, remember that this is not permissible for yourself, and that it is your duty to be to the sick what the Dioscuri are to the sailor (in distress)." [46]

Is it by chance that the evidence concerning the survival of the humanistic ideal does not seem to go beyond the second half of the fourth century A. D.? Since on the whole the material for the history of medical ethics is so fragmentary, one hesitates to hazard judgment. Yet one may say with assurance that from the third century, Stoic philosophy—of which the doctrine of professional ethos formed part and parcel—ceased to have influence. The Neo-Platonists established Galen as the unchallenged authority in medicine. Through him, the philosophical ethics of the scientist-physician, which had never quite lost its appeal, came to predominate among the learned. Among the general practitioners of late antiquity, the teaching of the deontological writings of the *Corpus Hippocraticum* seems to have prevailed.[47] As for the rising caste of especially privileged physicians—those who as city officials were granted immunity from public duties, and those who became court physicians—it is hard to believe that they should have been keen on following the precepts of brotherly love. As I mentioned before, Galen already noted that the city physicians accepted their position in order to be relieved from the staggering burden of "indirect taxation." The "courtly" ethics discernable even in his writings, according to which the physician will treat the emperor and his family, and all wealthy people for that matter, differently from what he proposes to do in the case of the poor, implies

[46] Κατὰ ἰατροῦ φαρμακέως, 6-7. Libanius writes in the vein of Cynic and Stoic popular philosophy, probably echoing older traditions. Already to Seneca and his generation, the physician had become "the friend" of the patient (*De beneficiis*, VI, 16, 1) sympathizing with him and loved in return as a friend (*ibid.*, 4-6); cf. above, note 43.

[47] Cf. *e. g.* the *Introductio* of Ps. Soranus, *op. cit.*, p. 245, 17; 22; 33. Even the late deontological writings soon became integrated into some of the collections of the Hippocratic works compiled in the Christian era; cf. Fleischer, *op. cit.*, pp. 108 ff.

principles hardly compatible with Scribonius' love of mankind, or Sarapion's belief in the brotherhood of men.[48]

In the short span of time during which ancient medical humanism was current, once it had finally been formulated in opposition to the ideals of earlier generations, it most likely remained restricted to a small minority of physicans. Scribonius himself divined the slim chances for general acceptance of his belief and put the responsibility for this failure upon the patients. "Rarely," he says (p. 4, 9 ff.), "does anyone make an evaluation of the doctor before putting himself and his family under his care. And yet, if people have their portrait painted, they will first try to make sure of the artist's qualities on the basis of that which experience can tell, and then select and hire him." It is no wonder, therefore, he continues (p. 4, 15), that so many physicians rest content with little effort. Where no intelligent selection is made, where the good and the bad are held in equal esteem, "everybody will practice medicine as he sees fit" (p. 4, 24). The true reason for the relative ineffectualness of Scribonius' programme probably lies in a shortcoming which it shared with all the other ancient attempts to shape medical practice in accordance with moral concepts. None of them had the backing of institutions or organizations that had the power to enforce rules of conduct.[49] Yet,

[48] For Galen's rules concerning treatment of the imperial family and of the rich, cf. *e.g. Opera Omnia* (ed. Kühn), vol. 13, pp. 635-38; 14, p. 659; also 12, p. 435. Surely, the distinctions here made became even more marked when the hierarchic structure of the empire was consolidated. The importance of the class of city physicians has been pointed up through Herzog's interpretation of an edict of Vespasian in which their privileges are set forth (*Urkunden zur Hochschulpolitik der römischen Kaiser*, Sitzberichte Berlin, 1935, pp. 967 ff.; cf. also Below, *op. cit.*, pp. 23 ff.). Following perhaps the example of Augustus, Vespasian granted to all physicians exemption from taxes and from the burden of having soldiers billeted in their houses. Antoninus Pius revoked this edict and introduced a *numerus clausus* for the privileged physicians in each city (cf. Below, *op. cit.*, pp. 34 ff.); Galen's rather damning statement on those who practice medicine in order to be tax-exempt—to my knowledge never quoted in the pertinent literature—may throw some light on Antoninus' reasons for curtailing the benefits of Vespasian's edict. The imperial policy, in my opinion, was motivated by the recognition of the usefulness of medicine to the state, a topic widely discussed at that time (Quintilian, *Inst. Orat.*, VII, 1, 38; 4, 39; also Ps. Quintilian, *Declamationes*, 268). Herzog ascribes Vespasian's action to the recognition of medical philanthropy (*op. cit.*, p. 985), and restores the text accordingly (v. 6). Yet he himself concludes from the passages in Quintilian and from other statements that Vespasian invested physicians with the right to form corporations on account of "the usefulness of medicine" (p. 982 f.). It was not until Byzantine times that the privileges granted were made dependent on sufficient technical knowledge and on the morally unobjectionable character of the recipient (Below, *op. cit.*, p. 41).

[49] Throughout antiquity, medicine remained free from supervision by civil authorities. Even Roman law dealt only with cases of death attributed to the physician's treatment,

this very fact makes the achievement of the individuals who aspired to a medical ethics all the more impressive. It is praiseworthy indeed that under the given circumstances so many—some whose names history has recorded, and others whose identity has been obliterated—heeded Sarapion's appeal "to heal their own minds first" before giving help to their patients; that they were willing to forego material advantage for the law of their own conscience; that they took the initiative in raising and clarifying the moral issue, thereby laying the foundation for all later medical ethics.

It seems safe to add that among the ideals conceived by the ancients none was loftier than that which envisages love of humanity as the professional virtue of the physician. Even the Hippocratic *Oath* assumes full significance and dignity only if interpreted in the way in which it was understood by Scribonius and those who came after him. That this ideal of professional ethics also is the one most difficult to live up to, goes without saying. In fact, one cannot help wondering whether unending failure rather than even momentary success must not be the inevitable fate of those who commit themselves in earnest to such a seemingly utopian doctrine. For does it not essentially amount to the demand that the physician should be a citizen of two states, as it were, the one here and now, where he has obligations to his country, the other "laid up in heaven," where he is obligated to mankind alone? How can such a conflict of duties ever be fully resolved?

No one saw this dilemma more clearly than did Osler, when in his last address, from which I quoted at the very beginning of my lecture, he extolled the ideal of ancient medical humanism and held it up as the ideal to be followed in the future. He spoke after the First World War, after the lights of civilization had gone out over the world. With intrepid honesty he acknowledged the fact that "scientific men, in mufti or in uniform" under the pressure of hostilities, of civic duties rightly or wrongly understood, had compromised their conscience.[50] In the atmosphere of modern nationalism and modern technology it had proved even harder than it may have been in the world of old to distinguish between the role of the physician and that of the citizen. Nevertheless, Osler was not shaken in his belief in the ideal, nay he staked all his hopes on a new effort to realize it.

"Two things are clear," he said, "there must be a very different

or with questions of fees and similar contractual problems (cf. Below, *op. cit.*, pp. 108 ff.; also pp. 12 ff.; 63 ff.).

[50] *The Old Humanities and the New Science*, p. 13.

civilization or there will be no civilization at all; and the other is that neither the old religion combined with the old learning, nor both with the new science, suffice to save a nation bent on self-destruction." Reforms are needed. "The so-called Humanists have not enough Science, and Science sadly lacks the Humanities." But even if this defect were remedied, still more remains to be done. What matters is to keep in one's heart and mind "the magic word 'philanthropy'", love of mankind. Then, one day "the longings of humanity may find their solution, and Wisdom-Philosophia at last be justified of her children." [51]

Perhaps for those who have lived through the nightmare of another World War, who have witnessed the horrors of Fascism and Communism, an effort still greater than Osler's is required in order to have trust in ideals and in the future. If they seek for encouragement, they will find it ever anew, I think, in the sober appeal to good will and reasonableness which Osler made at the close of his memorable last speech, *The Old Humanities and the New Science.*

[51] *Ibid.*, pp. 19; 34; 64.

THE FIELDING H. GARRISON LECTURE *

MEDICINE AND THE HISTORIAN

F. N. L. POYNTER

Mr. President, Members of the American Association of the History of Medicine, and guests,

I wish to express my sincere appreciation of the honour which you have offered both to myself and to the organization which I serve in inviting me to deliver the Garrison Lecture at this annual meeting of your Association. I also bring you greetings and good wishes from your colleagues in Britain and from the historical societies and clubs which are their chief medium for advancing the study of medical history in Britain.

Those who have read only the small selection of Garrison's letters which have been published, as well as the many members of this Association who must have known him personally will know that just as music and literature enriched his leisure hours, so the history of medicine made tolerable for him that heavy labour which in his moments of despondency he called his "weary bibliographical grind." Given the freedom of one of the greatest historical collections of medical literature in the world he was also conscious of the responsibilities and duties imposed by that kind of freedom, and if, in his later years, it seemed to his many friends that he underestimated what he had achieved, it was because he alone could appreciate the magnitude of the task imposed on him. There are few who could give us, as did Garrison in his *Introduction to the History of Medicine*, such a well-ordered survey of the vast quantity of documentary material, each item of which he had himself examined, catalogued and studied. His enquiring mind was that of a scientist in that he sought out the origins of things, but that of the artist in that he imposed on his results a design which was conformable with the general pattern of our culture as he saw it. History had for him a meaning and a purpose beyond the accumulation of facts and documents, a point which I shall touch upon in more detail later, and it was this purpose which, as I say, gave him the strength to endure the years of "weary bibliographical grind."

* Delivered at the twenty-ninth annual meeting of the American Association of the History of Medicine, Durham, N. C., April 20, 1956.

That it can do so I know from personal experience, and during the many years which I have spent working on the similar historical collections which Wellcome (aided on occasion by Garrison himself) brought together in London, the name of Garrison and the evidence which was daily before me of his prodigious industry has always been an inspiration. So it is that I come to pay this tribute to his memory with a feeling which is compounded of the familiarity with which one speaks of an old friend as well as the respect and genuine humility which the pupil feels for the master.

It was with the intention of discussing Garrison's contribution to historical study and teaching that I first began to work out the theme of my address, and with the idea of placing his work in the perspective of historical writing I began to consider what had been achieved in the way of enlarging and consolidating our knowledge by the last 250 years of medical historiography. It soon became clear to me that if I treated this theme in the manner it deserved I should have material for a volume, but that any brief account of it would be able to add little to what had already been done in the history of medical historiography by Paul Diepgen, Edith Heischkel and others.[1] Just as I reached this impasse, an experience which is probably familiar to all who write or lecture, a group of leading British historians opened a public debate on the methods and principles of historiography which revealed a widespread dissatisfaction with the present situation in the academic study of history. This feeling is one which periodically afflicts the conscientious and thoughtful historian and usually heralds a period of consolidaton and synthesis following one in which so many new facts have been accumulated by research that the material has got out of hand.

That a great deal of self-examination is going on in British historical circles is clear from the retrospective studies of historical writing recently published by Sir Maurice Powicke, the well-known mediaevalist [2] and Professor Butterfield,[3] who is one of the few general historians in Britain who has a serious regard for the history of science. The same mood of self-criticism permeated the discussions at the jubilee meeting of the Historical Association in January and was expressed before a much wider public by Professor Barraclough in the challenging reviews, both broad-

[1] For a list of these studies see Temkin, O.: An essay on the usefulness of medical history for medicine. *Bull. Hist. Med.*, 1946, *19*, p. 9, n. 1.

[2] *Modern historians and the study of history.* London, Odhams Press, 1955.

[3] *Man on his past. The study of history and historical scholarship.* Cambridge, Univ. Press, 1955.

cast and published,[4] of Sir Maurice Powicke's book, and again in his own volume, published only a few weeks ago, entitled *History in a changing world*. As if to underline the importance of this new trend in the approach to historical studies, one of our leading organs of scholarly criticism, *The Times Literary Supplement*,[5] recently devoted one of its voluminous special issues entirely to historical writing. That an article in this issue was given to technology and science but none to the history of medicine is probably a fair indication of how much we still have to do in Britain to bring our subject to the notice of the general historian.

I have no wish to introduce an element of gloom into this meeting and if I stir up any discontent I hope that it will be of the kind which spurs us on to greater efforts, but in the belief that we may profit from a brief examination of the situation in the history of medicine I should like to bring to your notice a few of the criticisms which have emerged from this discussion of general history. It has long been generally accepted that the history of medicine cannot be divorced from other historical studies. Only in its narrowest sense is it medicine or physiology or surgery rather than history, and all recent research demonstrates the number and variety of its facets and the fact that most of them can only be illuminated by the light which can be thrown on them by the results of research in other fields.

Modern methods of historical research, based on the critical and meticulous examination of original documents, are a product of German scholarship in the 19th century, but Butterfield traces their origins to ecclesiastical and classical historians of an earlier period and in particular to a group of historians working in the University of Göttingen from about 1760 onwards. From that time there developed a new kind of historiography, more accurate and detailed than the old kind of chronicle history and less opiniated and ideological than the historical writing of the 18th century *philosophes*. Implied in the use of these methods is the belief that the impartial historian should not essay a judgment until *all* the discoverable facts have been revealed and considered, and whatever we may think of this assumption, which must always be a salutary caution to those tempted to generalisation on insufficient grounds, these methods of research have produced results of the greatest value in helping man towards an understanding of his own past. Their universal acceptance by academic historians has also created a situation where the purpose of all this documentary study, which has been going on all over the world at

[4] The crisis of historicism. *The Listener*, 1956, *55* (Feb. 2), 171-2.
[5] January 6, 1956.

a tremendous rate for half a century, has become submerged by the means intended to achieve it. Far from attempting to make bricks without straw, researchers have been so busy making bricks, each with the prescribed amount of straw, that nobody has had time to consider what kind of building could be erected with this vast quantity of sound and fully guaranteed bricks. The grand design, the comprehensive synthesis, has become unfashionable among academic historians, and perhaps, as most of them think, impossible.

The dangers which Sir Maurice Powicke sees as the greatest threat to the study of history is an arid professionalism which regards history as made for the historian, together with an absence of vision which can make historical research a pedantic chase after the insignificant.

In his examination of these statements Barraclough [6] considers that Powicke deplores the symptoms without appreciating the underlying cause which may be found in the major premises accepted by historians for more than a century. His analysis of the present situation should be read at greater length in his own words, but to sum up his arguments, "historicism," resting chiefly on the concepts of development and individuality, has come to permeate all our intellectual activities. This "philosophy of history" has great achievements to its credit, for "it taught the historian to perceive the unique individuality of each past event, and the unique value secreted in that individuality," but "if the historian's task is to exploit particularity, to elaborate it with loving care . . . where can it end save in the love of detail for its own sake, and who is to blame the young historian who has been brought up in that dogma if he devotes himself heart and soul to what in the end is going to amount to little more than a footnote in the whole story, and if in doing so he loses all sense of perspective and proportion, and even of significance?" He goes on to attack the dogma that "the past exists for itself and that the historian's business is to reconstruct and recreate it . . . To me", he says, "that doctrine is nonsense. The past simply does not exist at all; the past is dead; as Professor Galbraith once said, it is as dead as the men who made it. Our concern with the past springs from the present. It springs from a living need, from what Sir Maurice himself calls our craving for an interpretation. Our history, that is to say our interpretation of the past, must be relevant to that need if it is going to be a living force." He calls an "astounding misconception" the idea "that history is self-sufficient; that one needs only to know how a thing happened in

[6] *Op. cit.*, n. 4.

order to understand its nature, and that nothing outside the historical process is required to explain its course." And he concludes that "history will either survive by finding a new set of values, or it will atomise and fragment into pedantry and antiquarianism."

I have chosen these remarks of Barraclough's because they express in a provocative form what is in the minds of some academic historians. We must leave them to settle among themselves whether or how they should seek a way out through the innumerable trees which have sprung up around them so that they may see the shape of the wood which has hemmed them in. Professor Barraclough is a scholar of repute who has just succeeded to Arnold Toynbee's chair in London, so that his observations cannot be dismissed as mere journalistic fireworks, and it may be profitable to consider how far they are applicable to the history of medicine.

A backward glance at a few of the most important histories of medicine will show that up to a certain point their authors have adopted the principles and methods of the general historian and that changes in principles or methods are sooner or later reflected in the writings of the medical historian.

In a very shrewd observation Butterfield remarked that the principles of modern historical research were first glimpsed by writers in the second half of the 17th century but then forgotten, and he considers the possibility that techniques of investigation introduced by scientists of that century may have played some part in inspiring this innovation. I do not know whether Professor Butterfield has ever read the preface to Leclerc's *Histoire de la Médecine*, but he would find there evidence to support his idea, for we find Leclerc writing in 1696 that there is

> abundance of difference between a History of Physick, that is, a collection of all that relates to their persons, the titles, and number of their writings, and a History of Physick, that is, to set forth the opinions of the Physicians, their Systems, and Methods and to trace step by step all their discoveries . . . This history . . . is obliged to penetrate into the very soul of every age, and every Author; to relate faithfully and impartially the thoughts of all, and to maintain everyone in his right, not giving to the Moderns what belongs to the Antients, nor bestowing upon these latter what is due to the former; leaving every body at liberty to make reflections for himself upon the matters of Fact as they stand related.
>
> This at least is my own Idea of the History in hand, and the end I proposed to my self in writing of it. I have disengaged my self, as much as possible, from all prejudice on this occasion, and have examined all the Authors that have come to my hands, by their own writings, and not by any verbal or written report of 'em, or their works.[7]

[7] Quoted from the English translation by Drake and Baden, London, 1699. I am

Writing almost exactly a hundred years later, and after the German reform of historical writing had already begun, Kurt Sprengel introduced his own history of medicine [8] in similar phrases. He too was determined not to limit his work to an account of great physicians and their writing, which, he pointed out, is not true history but the history of medical literature, and he set out to write the history of the succeeding systems, methods and practice and of the revolutions which have overtaken each in turn. He emphasises that the history of medicine is part of the history of civilization and that only this wider history can explain why a scientific revolution came about in the form and at the time it did rather than in another way and at another time.

After such promising statements Sprengel's history proves to be a disappointment, for apart from its major errors and omissions, his attention to a wider cultural history is limited in practice to a mere chronological alignment of events in political history with no attempt at interrelating them or explaining what effect, if any, these events had upon the history of medicine.

Daremberg [9] dealt with Sprengel's work severely, but justly, in the introduction to his own history 70 years later. He too expressed principles which are still acceptable to most of us, for he emphasised the primary importance of studying the original sources, declaring that the scientific methods of observation and experiment which had revolutionised the study of medicine could also revolutionise the history of medicine itself, that what was needed were facts and not ill-founded generalisations which attempted to embrace the whole of medicine. At the same time it should have its general background, where the progress of medicine was linked to the advances in other sciences and with the general advance of civilisation, for only in this context could there be revealed "the common law which explains their progress or their decline; that is the crux of history and its life." The words are almost the same as those of Sprengel, but Daremberg assures us that this "principle was first expounded and

indebted to Dr. Walter Pagel for pointing out the resemblance of Leclerc's principles to those enunciated by Francis Bacon in his *De augmentis scientiarum*, ii, 4. *See* Pagel, W.: Aristotle and seventeenth-century biological thought. In *Science, medicine and history*, ed. E. A. Underwood, Oxford Univ. Pr., 1953, vol. i, p. 509.

[8] *Versuch einer pragmatischen Geschichte der Arzneikunde*, 2. Aufl., 1. Theil. Halle, 1800. Einleitung, pp. 1-24.

[9] *Histoire des sciences médicales.* Tome I, Paris, 1870, pp. 36-9. See also the preface, and pp. 1-28 for his discussion of principles and pp. 29-66 for the best review of medical historiography up to his time.

supplied by Littré in his edition of Hippocrates," [10] that it was one which would reform the history of medicine and the one which he intended to follow in his own work. Daremberg also gave his complete approval to Rosenbaum's dictum that the history of science was still in its infancy, that what was needed, before any further attempt were made to write a general history of medicine, were detailed investigations and monographs on every aspect of medical history, however insignificant it might seem.[11]

By contrast, Haeser [12] struck an optimistic note in the introduction to the third edition of his history published only five years after Daremberg's, for he found that the history of medicine had undergone a thorough transformation since the time of Sprengel "through the widening of its meaning and the improvement of historical methods." He praised the work of Renzi and Puccinotti in Italy, and the "imperishable contributions of Littré, Daremberg, Briau, Dietz, Ermerins, Adams and Greenhill" to our understanding of the medicine of antiquity, and the studies on Arabic medicine by the learned orientalists Wüstenfeld, Steinschneider and Dieterici. Haeser's own work is a remarkable example of thorough German scholarship and is a rock upon which all later medical historians have built. He modestly tells us that it is designed to serve merely as a text-book, and taking for granted the "improved historical methods" which he mentions, he enters into no long discussion on the principles and methods of historiography, paying tribute in passing to "the general history of culture," especially in connection with the relative position of the doctor in Greek and Roman times and with the public care of the sick during the Middle Ages.

Later medical historians, Neuburger, Pagel and Sudhoff, nourished in the same scholarly tradition and trained in the same historical methods, all emphasised the importance of studying the history of medicine in the context of wider cultural history, and Neuburger especially demonstrated the deeper understanding which could be gained of past medical systems by studying the history of medical ideas. All of them went much farther in this than did Sprengel with his mere juxtaposition of what he considered simultaneous historical events.

Julius Pagel has left us an eloquent statement of what he conceived to be the nature of history and the role of the historian. He believed that

[10] Daremberg: *op. cit.*, p. 15.

[11] Daremberg: *op. cit.*, p. 39.

[12] Haeser, H.: *Lehrbuch der Geschichte der Medicin.* 3. Aufl., Bd. I, Jena, 1875, pp. ix-xii.

> The mere cultivation of chronology and veneration of the achievements of our predecessors do not make history. . . . The true historian will be the critic who introduces order into apparently chaotic material, finds the right thread of continuity and makes himself a contemporary of the past. He will see the past in the light of even the smallest features of his own time and culture. To him the behaviour and motives of the great figures of history will lie open. He will be at home in their literary remains and, however conscious of their achievement, not hesitate to review it critically. Last, but not least, his representation should be interesting and of high literary quality in order to give inspiration and to discourage petty and malicious treatment of the subject. The great Historian—in a general sense—must combine the imagination of a poet with the enthusiasm of an orator, the detailed knowledge of a specialist with the vision of a statesman, philological technique with the shrewdness of a lawyer, the practical common-sense of a man with the ethical maxims of a philosopher and the insight of a psychologist with the intuition of a prophet.[15]

Osler and Garrison, both strongly influenced by the great German school of history, also tried to bring out to a varying extent the significant relationships between medical thought and practice and other human activities. All of them were well aware that new facts, revealed by specialised investigations, were rapidly being added to the reserves of knowledge, but nevertheless they felt the need for keeping track of all these growing points of knowledge by a periodical survey which served as a kind of progress report. None of them made any greater claims for his work than that it was a text-book for students, an introduction or general survey for the practising doctor or the well-educated layman. In those years before the first World War Clio was the most favoured of all the Muses. Bathed in the new and splendid light of the evolutionary concept, her hand raised aloft to point the way to inevitable progress, she was an inspiring figure, and to a considerable extent we are still living on the tribute which the medical historians of that time laid at her feet.

The stimulus given to the study of the history of medicine by these men is still felt among us. Neuburger's penetrating analyses of classical and mediaeval texts will not easily be superseded, and the sheer mass of well-documented information which Garrison succeeded in condensing within the covers of a single volume, which still remained readable, has long been a treasury with an ever-open door for many who forgot to record their visits.

And in Britain too we had men who had earned their place in any international company. Men like Withington, whose erudition and originality in research is so unobtrusively and modestly presented that his *Medical*

[15] Quoted in Pagel, W.: Julius Pagel and the significance of medical history for medicine. *Bull. Hist. Med.*, 1951, *25*, 207-225.

History is sometimes dismissed as a very readable collection of historical essays; J. F. Payne, whose account of Anglo-Saxon medicine has not yet been superseded, and Sir Clifford Allbutt, whose authoritative account of Greek medicine in Rome is one of the most valuable of British contributions to medical historiography.

But Osler and Sudhoff, men so different in environment, personality and capacities, may be taken as the symbols of a dual-natured historical movement which is in fact more active and widespread than it has ever been, although some who realise its potentialities may yet deplore the pace of its advance. Osler and Sudhoff typify so perfectly the two different approaches to the history of medicine. Osler, the cultivated amateur, has become a legend, a legend which later historians may have difficulty in apprehending from the mere perusal of his writings. He, more than anybody, realised that history, in Barraclough's phrase, "springs from a living need," and he seized every opportunity of introducing it into his medical teaching. He preferred the small student group, the informal address, the clubroom atmosphere, as media for communicating to others his enlightened enthusiasm. In America and in Britain he left his mark on all those who knew him, an impression which has now been faithfully handed on to a second generation. Sudhoff, the dedicated professional, with his immense industry and powerful organizing ability represents all that we admire and value in German historical scholarship. The Institute which he directed at Leipzig, the first of its kind in the world, gave force, direction, and new material to medico-historical studies everywhere and firmly established the history of medicine as an academic discipline meriting the attention of scholars in many other fields. The Leipzig Institute also trained other historians in the same tradition and one of the most brilliant of them was destined to unite all that was best in the Old World with all that was best in the New. During his long stay in your country Henry Sigerist played a great part in making America the Mecca of medical historians the world over. From afar we read of the work of the Institute at Johns Hopkins, which owed so much to the energy and foresight of its founder, William H. Welch, and we watched with hope and admiration the progress of a new young school of highly trained historians who have already made a significant contribution to our study. We saw with relief that the history of medicine had at last, on the academic level, come of age in the English speaking world.

At the same time, Sigerist, who was by temperament so well fitted to appreciate the value of the Oslerian tradition, encouraged the historical outlook in medicine at every level from the informal students' club to

the learned society, and when he came to plan his own history he embarked upon a work which was to supply a living need and not to serve as a pious monument to the achievements of the dead. In the introduction to his first volume [14] he sums up his views on the nature of the history of medicine and the qualities required in the medical historian. His conception of the historian's role was already known to most of us here and his insistence that the patient should share the centre of the stage with the physician did much to liberate medical history from the narrow confines of literary history and to integrate the history of medicine with social history, both being, in his opinion, sociological studies.

How far this is true is arguable, but this belief gives the history of medicine a wider scope than has ever been given it before. It does not of course exclude all the other possible approaches to the subject. When Sigerist smiles, not scornfully but in gentle admonishment, I am sure, at those who imagine that the history of medicine consists of "hunting for 'Fathers' of every branch of medicine and every treatment," he is reminding us that although interest may first show itself in this way it should not end there. His remarks also serve as a warning against the distortion which most afflicts books on the history of medicine and which is most apparent to the general historian. It goes beyond what Rosen [15] has so aptly called their "iatrocentric" emphasis and is revealed in an over-concentration on the great figures who seem to move and have their being in some ethereal vacuum from which they draw the inspiration for the discoveries which mark off so neatly one epoch from another. This didactic fiction presents a false view of history. Let us have our heroes of medical progress and let books be written in their honour, but let us not imagine or lead students to believe that there we have the whole story. Recalling Barraclough's words, knowing *how* these discoveries were made will not tell us *why* they were made, which is the more important and instructive of the two answers we seek.

Just because most of those who approach the history of medicine do so with a scientific background and training, it is as well to remind ourselves from time to time that not all the facts, and not always the most important facts, are contained in the documents from the past which are available to us, that practice is not always identical with precept, that medicine is essentially a humane study in the exercise of which scientific knowledge and methods are employed to a greater or lesser degree, and

[14] *A history of medicine.* Vol. I. New York, Oxford Univ. Pr., 1951, pp. 3-33.

[15] Rosen, G.: Levels of integration in medical historiography. *J. Hist. Med.*, 1949, *4*, pp. 460-467.

that when we come to study its history, as in any other branch of human affairs, certitude may be impossible of achievement, while the appearance of it, in what seem to be authoritative accounts studded with impeccable references, may yet present a view of some past event which is essentially false and misleading.

There is a modern heresy with which, I hope, the view of history as serving a "living need" will not be confused, which consists in interpreting the past only in terms of the present, so that everything which does not accord with modern theories and practice is dismissed as valueless while other writings are singled out for praise because they seem to "make sense" to the scientist of today, but whether it is always the "sense" intended by the writer is another matter. We have constantly to remind ourselves that our system of medicine is not the final end product to which everything which has gone before is but the prelude, for our system will in turn be superseded and our theories be the subject of enquiry by future historians.

Let us hope that those historians look at our age with more humility and understanding than Macaulay showed in 1835 when, in his famous Minute on Indian education, he doubted the necessity of paying people to learn Sanskrit or Arabic merely to study "false history, false astronomy, false medicine . . . in company with a false religion."[16] A century of historical research has at least brought us to a position where complacent blindness of this kind is rare among any who pretend an interest in history. Probably one of the greatest needs of our time is an understanding of the resurgent peoples of Asia and Africa whose reaction against western influence makes it all the more necessary to know something of the age-old cultures from which stem the beliefs and practices of many millions of people. No programmes of technical aid, no new policies for medical care in those regions of the world can be implemented without taking account of this important factor. The work which has been done by western scholars to enlighten us on Hindu, Islamic, and Chinese medicine and on primitive medicine in all parts of the world is therefore of the greatest practical importance and is far from being the "pedantry and antiquarianism" which Barraclough foresees as a possible end of the historian's efforts.

In fact, the ramifications of the history of medicine are so wide, and

[16] Lord Macaulay's Minute is printed in Lees, W. N.: *Indian Musalmans; with Macaulay's Minute.* London, 1871; *and* Laurie, W. F. B.: *Some distinguished Anglo-Indians. Second Series, including Macaulay's great Minute on Education in India.* London, 1888.

some of its aspects have such a bearing on current sociological problems that the medical historian equipped to give us an authoritative survey of the whole subject must have an exceptionally wide knowledge and experience. For Sigerist, the ideal medical historian would be a physician who was also multilingual and a trained historian, as well as archaeologist, anthropologist, orientalist, classical scholar, philosopher and social scientist. When we consider the number of specialties in medicine alone, without all the ancillary sciences which support it, together with the fact that we live in a society which encourages specialism by its close academic organization, this ideal is more difficult of achievement than may be realised by one who is himself possessed of an extraordinary range of knowledge. To the orthodox academic administrator these requirements seem to cut across all the neat boundaries within which specialist studies are confined in the modern university, and the fact that the study of the history of medicine does in fact call upon all these branches of knowledge —and many more—may have something to do with the slowness with which it has been accepted as an academic discipline. In the discussions by the British historians which I mentioned earlier we were reminded that it is only fifty years since the study of general history was established as an independent discipline in British universities, yet already, after this comparatively short period, the study itself is seen to be in danger from its own success, the research student chasing after more and more detail while the historian who is expected to interpret and knit together all this detail throws up his hands in despair at the growing difficulty of his task.

Those who would like to see closely organized independent departments for the history of medicine established in every university may well ponder on this situation. Some there must be, of course, in order that research and training at a scholarly level may be carried on, so that guidance and direction may be given to historical writing of a more general kind, and so that there may be some unifying force among the numerous individual workers who, in spite of their amateur status, provide a significant proportion of the great bulk of historical writing and even a good deal of the informal teaching which first arouses the interest and enthusiasm of the student. There must, of course, be specialists in the history of medicine, but the fact that their study emphasises the unity of medicine in an age of specialism should help them to beware of that academic *hubris* with which specialists often regard the work of those who are not of their specialty. The peculiar many-sidedness of the history of medicine makes it appropriate for study and teaching at many different levels

and in many different ways. In 1948 Dr. Rosen [17] presented to this association a valuable historical survey of the widely varying attitudes towards this problem, and a divergence of views was also apparent in the replies to the nation-wide enquiry made by Sigerist in 1939.[18] The report of the latest survey was presented to your last annual meeting by the *Committee to Survey the Teaching of the History of Medicine* [19] and in it we find that there are already in the universities of the United States and Canada 23 organized departments or divisions of the history of medicine, and that organized courses are offered in 52 of your medical schools. To us in Britain, where the past is so much with us in our public life but where we still await the establishment of our *first* university department of the history of medicine, these are figures which make us rub our eyes in wonder. But however backward we may be in organization there are many British medical teachers who believe that the history of medicine can and should be introduced into ordinary medical teaching, in the classroom, in the laboratory, and on the ward-round. When the student's interest is thus aroused he joins some club or society where he may take part in informal study and discussion, and so is created the interested public without which the professional historian would, if he existed at all, be working in an ivory tower.

At some stage in his career practically every writer on medical history has felt urged to publish an *apologia pro vita sua*, justifying his preoccupation with the past and emphasising the value of the study of his choice. We have a number of excellent discussions on the usefulness of medical history for medicine and from one of them I borrow this quotation from Theodor Puschmann which summarises the claims made for it in this respect.

> The use of historical studies manifests itself in three ways: First, they complete general education; then, they form the foundation of professional knowledge and fortify it; and finally, they further the education and ennobling of the character.
>
> When the history of medicine and of the sciences is seen as a part of the general history of culture and is thus presented, when the teacher follows its relation to the other arts and sciences, and, vice versa, calls attention to the influence of the latter on natural science and medicine, when he considers at once political events and social conditions, and gives to the whole the characteristic

[17] Rosen, G.: The place of history in medical education. *Bull. Hist. Med.*, 1948, *22*, pp. 594-629.

[18] Sigerist, H. E.: Medical history in the medical schools of the United States. *Bull. Hist. Med.*, 1939, *7*, pp. 627-662.

[19] *Bull. Hist. Med.*, 1955, *29*, pp. 525-544.

aura of the age, his lectures will complement and broaden the education of the students in every way.[20]

But whatever may be provided for the undergraduate, the postgraduate student and the medical teacher should at least be well grounded in the history of his own specialty, and it is at this stage that the academic department can be most useful, not so much in the details of the history as in correcting the major historical errors which so many of us carry from the schoolroom, offering instruction in the methods of historical research and in the general medical and social background upon which the history of the particular specialty is to be traced. In this way too the historical specialist would be continually refreshed and stimulated by close contact with current medical thought and practice, and without that contact history could very easily become mere pedantry and antiquarianism.

Nevertheless, the history of medicine is a subject much wider than medicine itself, and until the general specialist envisaged by Sigerist appears on the scene we must continue to encourage all kinds of experts to do their stint of work in adding to our knowledge. In America today, as in Europe during the last century, this has been done with notable success. Sigerist's own successor as Director of the Institute at Johns Hopkins was trained as a general historian and has given us what he frankly calls "an interpretation" of the development of modern medicine which for the first time set that important phase of medical history in its true historical setting.[21] Other historians have made vital contributions to the development of mediaeval and renaissance studies in the medical field, and when we read Sigerist's valedictory address at Johns Hopkins [22] it is clear that in that one spot was gathered together a team which, among its individual members, could boast of practically all the skills required of the ideal medical historian. With their duties of training as well as of research, it is probably too much to expect that they should also produce that new general synthesis which is so much needed if historical teaching at the ordinary level is not to be completely outmoded. It has been said that the co-operative work is never satisfactory, that a

[20] Quoted in Temkin, O.: An essay on the usefulness of medical history for medicine. *Bull. Hist. Med.*, 1946, *19*, pp. 9-47. See also the article by Walter Pagel (n. 13) and those by E. H. Ackerknecht (*Bull. Hist. Med.*, 1947, *21*, pp. 135-145) and R. H. Shryock (*Univ. Penn. med. Bull.*, 1955, *4*(*1*), pp. 3-13.)

[21] Shryock, R. H.: *The development of modern medicine. An interpretation of the social and scientific factors involved.* New York, Knopf, 1947 (revised edition).

[22] Medical history in the United States. *Bull. Hist. Med.*, 1948, *22*, 47-66.

committee never wrote a book or painted a picture. This is true enough, and it is one of the heaviest blows which has befallen our study that the one man whom we all knew to be capable of providing us with a balanced and comprehensive interpretation has been handicapped by illness in the great project which he has undertaken. But whether it be a symposium or the work of a single author it must still be the result of co-operative effort. Not only does the author have to rely upon the investigations of detailed aspects made by a great number of research workers but the preparation of the work itself can never be done by a single individual. Writing on the limitations of historical knowledge in his contribution to the discussion on historical writing, Arnold Toynbee dwells upon the difficulty of this task.

" The professor at the dictaphone," he says, " will be at the mercy of the woman at the stacks and of the research student in between; and we have hardly yet begun to explore the technical and psychological problems involved in such multiple and yet intimate intellectual co-operation as this will have to be if it is to have even a partial success." [23]

I doubt whether the ten volumes of Toynbee's own *Study of History* were written in this way, and his juniors, as juniors so often do, may yet prove his forecast too gloomy. Selection there must be. Not all the products of research are of primary importance and the expert must be allowed to employ his *expertise* in deciding what may safely be given a minor place. Although, as Toynbee reminds us, the term " history " is a Greek word which means literally " investigation," an investigation with no conclusion which interprets the facts is a task left unfinished. In a simple and unpretentious way, in a little book intended for students,[24] Charles Singer showed us a generation ago that a well-stored and discriminating mind could assimilate the facts and from them create a coherent and significant picture. It is in fact little more than a sketch with its own individual emphasis and omissions, but any interpretation, comprehensive or partial, is essentially individual. When it comes to writing history, on the basis of facts already investigated and recorded, the product takes the impress of the author's mind. Historical writing is a literary art, and art implies selection. The finest artist is not the one who fills every square inch of his canvas with his subject; he is more likely to be one who so employs the empty spaces on his canvas as to enhance the clarity of his line and to enrich the value of his forms, and without gradations of

[23] *Times Literary Supplement*, Jan. 6, 1956. Supp. on Historical Writing, p. iv.
[24] *A short history of medicine*. Oxford, Clarendon Press, 1928.

tone and the variations of light and shade the picture is lifeless. The empty spaces in the picture, the silences between the notes in music, are both an essential part of the composition, and I would suggest that, once the facts have been determined, the historian who attempts the kind of work I have in mind must then approach his task in the manner of the literary artist, selecting, summarising and expanding in order to bring out the significance of his theme as he sees it. There is nothing pre-ordained in the pattern of medical history. Most of the works known to us do show a similar pattern, as if the order and the continuity existed before the historian imposed them there. This is one of those major assumptions which we rarely question, not realising that it is a comparatively modern phenomenon and itself a product of nineteenth century scientific theories which have not weathered so well in other environments.

The impact of the historical fact upon the prepared mind can produce results which are as new and exciting and as powerful in shaping our present outlook as anything which comes from the laboratories. The history of medicine offers unparalleled opportunities for the exercise both of the moral and intellectual qualities desiderated by Pagel and the specific types of knowledge required for Sigerist's ideal historian. If we have doubts and uncertainties they are those of youth and not of disappointed age, for the study, if not still in its infancy, has still some way to go before its exponents find themselves sharing the misgivings and disenchantment of the general historians. If it is possible to learn something from their experience, we should be able to avoid the cul-de-sac down which they have travelled so hopefully and keep to the broad highway. The need of medicine for pragmatic history as an adjunct in its teaching is an invaluable asset to us, for it acts as a stabilising factor by emphasising interpretation and synthesis. The demands of scholarship that medical history should be truly historical ensure that its standards shall not fall below those current in academic research and should help us to avoid the stereotyped, the superficial and the false and to appreciate the importance of original research. The two kinds of history are complementary and cross-fertilising. Both must be allowed to grow side by side in the particular garden which we cultivate and if we ensure that both are equally well tended and well nourished we may have some reason to be satisfied with the fruits of all our labours.

TEXTS AND DOCUMENTS

RUDOLF VIRCHOW: STANDPOINTS IN SCIENTIFIC MEDICINE

TRANSLATED WITH AN INTRODUCTION BY L. J. RATHER*

For those whom the name Virchow summons up the vision of a septuagenarian peering sharply through a pair of tiny glasses at his students and colleagues, sparing no one from the cold acid of his scorn for stupidity or dishonesty, whether the highest of government officials or the neophyte in medicine, the idea that this man was himself once a struggling beginner seems quite foreign. Curiously enough, this first impression has a good deal of validity. Virchow was one of that class of persons, rare in the scientific world although common enough in the sphere of the arts, who develop early and retain late their critical and creative powers, who remain active over stretches of time vast enough to encompass two or three ordinary creative lives. Such men turn into legendary figures in their own time, as did Virchow. Virchow became a person to reckon with in German medical circles at the age of only twenty-three when, in a talk before notables of Berlin civilian and military medicine, he stood the accepted doctrines about phlebitis on their heads, doing this in such a manner that Geheimer Rath Busch, so Virchow wrote to his father,[1] turned to his neighbor and said: "Nun, haben Sie es gehoert? Wir wissen also garnichts mehr!" (One must recall, in this connection, that a "Geheimer Rath" was an extremely important and powerful individual in the Germany of the nineteenth century with a social position roughly equivalent to that of a high government official in present-day American society). Fifty-seven years later, after a career during which he distinguished himself in anthropology, politics, and social medicine, as well as in pathology, Virchow died at a time when his physical and mental powers were still largely unimpaired.

Two years after stirring up the Geheime Räthe, Virchow was teaching courses at the Charité in Berlin which were attended by dignitaries of medicine as well as by practical doctors. Virchow was still very young,

* Department of Pathology, Stanford University School of Medicine, San Francisco, California. The author wishes to acknowledge the valuable help of Dr. Ingeborg Arnold in the preparation of this translation.

[1] Rudolf Virchow: *Briefe an seine Eltern*, edited by Marie Rabl (geb. Virchow), Leipzig, 1907, letter dated 27 August 1845.

but already quite well known. In a letter to his father, dated 17 June 1847, he says that the course is going well, and achieving a certain degree of popularity. His own name is in the public eye and he offers his father the following "curious example" to prove his point:

Vor einiger Zeit bin ich auf einem Balle bei Madame Crelinger: ich tanze mit einer jungen Dame Contretanz, der ich eben zuvor vorgestellt war. In einer Pause sagt sie: "Habe ich recht gehoert, sind Sie der Dr. Virchow?" Als ich bejahe, fragte sie weiter: "V-i-r-c-h-o-w?" In hoechstem Grade erstaunt, bejahe ich auch dieses. Darauf sie: "Ach, das ist gewiss Ihr Herr Vater, der die Vorlesungen ueber pathol. Anatomie haelt? . . ."[2]

The young woman simply could not believe that the beardless youngster who was her dancing partner could be the famous Dr. Virchow. It must be his father whom people were talking about!

In the same year the first volume of the *Archiv fuer pathologische Anatomie und Physiologie und fuer klinische Medicin* appeared, edited by Rudolf Virchow with the assistance of his colleague Reinhardt. Eight of the fourteen articles appearing in the first volume were written by Virchow himself. The leading article in the first issue (pp. 3-19): "Ueber die Standpunkte in der wissenschaftlichen Medicin," was the initial one of a long series in which Virchow outlined his philosophical and methodological position, a task which occupied him sporadically throughout his long life. It is this essay, never before translated into English so far as I know, which I wish to present. Virchow read it before the "Gesellschaft für wissenschaftliche Medicin" in Berlin on 5 December 1846, but it was not published until the following year. For orientation with respect to the situation in medicine at this time reference may be made to a paper by Owsei Temkin,[3] Virchow's evaluation of the place of physiology in medicine was shared by a group of young clinicians who had made "physiological medicine" the title of their organ (*Archiv für physiologische Heilkunde*) and it is this group which Virchow mentions in a footnote.[4]

The reader should bear in mind that the paper was designed to be spoken. Evidently Virchow did not bother to revise it fully for publication and, as a result, the style is rather loose and prolix. The translation is quite literal. Long sentences have not been shortened, and the innumerable particles, which are used more freely in German than in English, have been retained.

[2] *Ibid.* Letter dated 17 June 1847.

[3] "One Hundred Years Ago: A Symposium Presented by the Johns Hopkins Institute of the History of Medicine. Medicine in 1847: Continental Europe. Owsei Temkin, *Bull. Hist. Med. 21*: 469, 1947.

[4] See also the introductory remarks to my partial translation of Virchow's Scientific Method and Therapeutic Standpoints, *Stanf. Med. Bull., 14*: 112, 1956.

STANDPOINTS IN SCIENTIFIC MEDICINE

RUDOLF VIRCHOW

When we speak of scientific medicine, at the present time, it is highly necessary to reach agreement among ourselves concerning the meaning of the words.

According to our point of view it is self-evident that medicine involves the art of healing—although the most recent developments in medicine may make it appear as if this had hardly anything to do with the matter. Only those who regard healing as the ultimate goal of their efforts can, therefore, be designated as physicians.

Ever since we recognized that diseases were neither self-subsistent, circumscribed, autonomic organisms, nor entities which have forced their way into the body, nor parasites rooted on it, but that they represent only the course of physiological phenomena under altered conditions — ever since this time the ideas of therapy had to be the maintenance or the re-establishment of normal physiological conditions.

The actual accomplishment or, more precisely put, the striving for an actual accomplishment of this aim comprises the task of practical medicine.

Scientific medicine, for its part, has as its object the investigation of those altered conditions which characterize the diseased body or various ailing organs, the identification of abnormalities in the phenomena of life as they occur under specifically altered conditions, and, finally, the discovery of means for abolishing these abnormal conditions. It presupposes therefore a knowledge of the normal course of the phenomena of life and the conditions under which this course is possible. It is, therefore, based on physiology. Scientific medicine is compounded of two integrated parts—pathology, which delivers, or is supposed to deliver, information about the altered conditions and altered physiological phenomena, and therapy, which seeks out the means of restoring or maintaining normal conditions.

Thus practical medicine is never the same thing as scientific medicine, but, even in the hands of the greatest master, rather an application of it. The scientific practitioner, however, distinguishes himself from the routinier and the medical opportunist by making the achievements of scientific medicine his own so that they form the basis of his performance and he serves neither the idol of accustomed routine nor that of chance.

Medicine presents itself to us in this aspect if we project an ideal picture of it. Let us not deceive ourselves that the realization of this picture is

not still far in the future. We know only in a very fragmentary fashion the conditions which determine the appearance of abnormal phenomena in the living organism, and, even when we do know these conditions, often enough we do not, to our regret, know the means to eliminate them. Under such circumstances the practical physician has the right to cherish a certain degree of empiricism, but so much the greater is his obligation to abolish this empiricism by means of his own observations, and to help in the raising of the glorious structure of scientific medicine. The clinical physician is chiefly obligated, since the clinic is the focus of medical practice. Hence the control of a clinic is such an extremely important matter at the present time, since the clinician of our day must be not only a scientific practitioner but an observer and investigator as well.

It is said that there are circumstances in which the split between scientific and practical medicine is so great that the learned physician is able to do nothing, while the practical physician knows nothing. Lord Bacon has said, *scientia est potentia*. Knowledge which is unable to support action is not genuine—and how unsure is activity without understanding! This split between science and practice is rather new; our century and our country have brought it into being. How could medicine go unscathed when an inner turmoil disrupted all relationships of German life? Who recognized a separation of medical science and medical practice at the time of Boerhaave and Haller? Yes, who knew at that time of a split between practical medicine and the entire immense field of natural science? But then there came years of deep spiritual oppression, a time of the greatest tribulation in the inner life of our people; in such a time it is granted only to the very great or very small among men to turn their eyes away from the immense changes in the body politic to the puny phenomena of eternal nature. French medicine has come out of the storms of the revolution stronger and better than before, since the French people have actually completed a phase of their revolution. English medicine never broke the bond of science and practice, for the spirit of England moves steadily and undeviatingly along the appointed path. In Germany, at the time of the revolution, a philosophy was born, a philosophy which turned itself further and further away from nature, and a return to nature was possible only after this philosophy brought about its own dissolution. This return to nature manifested itself in the history of medicine in three stages: the stages of nature-philosophy, of natural history, and lastly, of natural science. Everyone knows the principles by which these three points of view have influenced medicine. The significance of each stage may best be assessed from the position which each assigns to hypothesis, since the three

stages are characterized by a transition from an easy-going procedure to one less so, and culminate finally in a strict method. The school of the nature-philosophers, as is well known, based its medical system on its philosophy; to it logical hypothesizing was a completely justifiable equivalent for observation. The school which followed, calling itself very accurately the "natural historical," partly absorbed this point of view during its development and, in particular, it elevated proof by analogy to a position of extreme importance, exploiting everything from the whole of nature, as it was understood, including past and present medical knowledge, and, with a great deal of spirit, erecting a structure whose supporting pillars were so many analogies and hypotheses. Later, medicine reached the natural scientific stage, at a time when philosophy, too, had begun to turn itself toward nature and life; just as philosophy vindicated the old rights of the senses, so medicine threw off belief, cashiered the authorities, and relegated hypotheses to a housebroken existence. While used frequently enough in private, they are left at home when we step into the public forum. Both medicine and philosophy are in agreement that only a serious study of life and its phenomena can assure for them a place of significance in it. Only a precise understanding of the conditions of individual and community life will make it possible to establish the laws of medicine and philosophy as general laws of mankind, and only then will the saying, *scientia est potentia*!, be fulfilled.

It is certain that scientific medicine, as presently constituted, cannot permit itself to consider setting up a code of rules for medical practice, but, is it therefore justifiable to retain a scientific and a practical standpoint in medicine? From the period of philosophical confusion, we have clung to a conception which is nowhere further developed than in Germany and which has nowhere produced more harm than in medicine—I refer to the idea of "Science for its own sake," of a detached science for its own ends, a science for the sake of mere knowing. This phrase recalls the non-humanistic conception in which man regards his soul as the true reality, as his real essence, where he "knows himself only as spirit and has not yet come to value his corporeal part." True science possesses the ability to act, and it is a general law that everything which can be actualized desires to be actualized, and strives for a real existence. Nothing, however, achieves a real existence except as a part of life, and, just as the general philosophical viewpoint of the present day has thrown off its tendency towards the transcendental, so is the standpoint of a detached science devoid of effective force in medicine. It certainly does not detract from the

dignity of science to come down off its pedestal and mingle with the folk; from the folk science gains new strength.*

To this desire for absolute science, although it indisputably brought great benefits for awhile, we owe it that physiology has for decades remained foreign to medicine, and that medical observations have done without a physiological basis just as physiology has deprived itself of medical experience. Many a clinician, to be sure, has prided himself on his physiology, but often enough his physiology deviated in essential points from "the" physiology. There are bridges between physiology and practice although few enough have crossed over them, and the "physiological art of healing," one regrets, has not brought healing in its wake.** In saying this no direct reproach is made against physiology; the greater portion of the guilt lies with the pathologists themselves, beating about with empty words year after year instead of providing themselves with definite concepts. They have had to suffer a good deal of misfortune because of this. Others have come to work in their fields and the pathologists have rejoiced over this until they noticed that the seed yielded flowers but no fruit. Others, again, have deposited eggs in the nest which the pathologists, with a little luck, were supposed to hatch. Since they had, meanwhile, become somewhat mistrustful they were forced to swallow bitter parables.

Three times since the beginning of the natural scientific period (therapy being entirely overlooked in these quarrels) pathology has suffered invasions which have left permanent destruction in their wake; once by chemistry, then by general anatomy and physiology, finally, and most recently, by general pathological anatomy. The result of these invasions is now, and perhaps will be to an even greater extent in the near future, a state of general confusion, an endless chaos from which the practical physician will issue forth with the greater mistrust the more often these upheavals are repeated. When he asks himself what of real value to him has

* Basically this "Science for its own sake" is only a piece of rhetoric. "Science in itself" is nothing, for it exists only in the human beings who are its bearers. "Science for its own sake" usually means nothing more than science for the sake of the people who happen to be pursuing it. If someone wishes to pursue science for his own purposes, if he has a need for knowledge, then the investigation and extension of his knowledge is the goal of his activity, and no one can object to this. If this man is a physician, however, and if he says that the healing art, be it in direct practical activity or in the theoretical elucidation of therapeutic measures and mechanisms, is the purpose of his activity, then it is self-evident that his science must include that which is pertinent to this proclaimed purpose.

** The new prospectus, publicized by the "physiological healing" (group) for its further activities, agrees in essence with our point of view; we shall be pleased if our efforts can be united with those of other like-minded investigators, for a common purpose.

resulted from all this he finds, to his sorrow, little that he can use. Indeed, if the proponents of the movements in the field of pathology, among which open conflict has broken out, continue in the same way, we will soon have a group of self-sufficient, mutually exclusive systems of pathology.

It must be realized that now is not the time for systems, but the time for detail-investigations. There is a certain danger of a retrogression to crude empiricism in this procedure, but the danger is, however, present only so long as an arbitrary attempt is made to draw general conclusions from detail-investigations. This is an error which the "systematic spirit of the Germans" has committed often enough; and it will disappear to the extent that the number of investigators increases, and the more numerous the detail-investigations become. Let us seek general laws in the sum of these specific phenomena, but let us refrain from constructing systems which derive the phenomena from *a priori* general laws, or general laws from isolated phenomena. We have no use for systems until our experience is sufficiently inclusive to give us the guarantee that the system contains truth.

Chemistry has already accomplished a great deal for us although this far very little is useful for practical purposes. We expect a great deal more from it, but only if it devotes itself to individual phenomena more often, and places itself in the position of spokesman for medicine less often, than heretofore. We can learn much from chemistry, but we will have to reserve for ourselves the privilege of applying its findings.

General and developmental anatomy have given us much information about individual phenomena but they can never give us a comprehension of the conditions determining these phenomena. These sciences can and will therefore never participate in the real kernel of medicine, the art of healing. Pathology, as well as therapy, can be constructed only from within out, and we dispute the right of any discipline not itself rooted in the contemplation of diseased life to share in the interpretation of its phenomena.

In this connection it appears to me that all those who understand the situation agree that pathological anatomy is the ante-room of medicine and it would please me, least of all, to be about to detract from its value. However, in the interest of pathological anatomy itself it appears to me advisable to elaborate regarding the value and significance of the subject for medicine, and to puncture certain extravagant hopes which have been founded on this discipline.

Often enough one hears the reproach that pathological anatomy has to do with end-stages and not with disease itself. Those who say this are

half right and half wrong. It would amount to closing one's eyes before the facts of nature to deny that almost all diseases bring forth material, sense-perceptible changes in the body, which of necessity belong to the history of the disease, and that the majority of diseases are accompanied, from the beginning on, by highly decisive, pathognomonic, material disturbances. To this extent it is incorrect to doubt the significance of pathological anatomy in medical science. However, pathological anatomy has another side and, when this is considered, its opponents have a good deal of justification.

Let us consider for a moment the natural sciences in general, with respect to the mechanics of their development. Every natural science begins with a description of individual objects, more or less rapidly followed by their classification, to which, finally, the story of the origin and development of these objects is added. The descriptive part is only propaedeutic and its greatest achievements can have no more than an aesthetic interest; it is thus that we learn to know the properties of things, without learning of their interrelationships. Classification is a requirement of the ordering intellect; though it can be, to a high degree, scientific yet its significance is purely practical; it is used for scientific orientation and mutual, effortless communication. Genuine science commences with the history of material bodies; it inquires into the mechanism and circumstances of their origin and development, and into the temporal and causal interrelationships between these bodies, being concerned less with bodies as such than with processes in them, that is, with phenomena and motion. This part of science can in general be designated physiological; the first two parts, anatomical.

In what manner, now, does the scientific investigator build up the physiological part? Let us take one example: it had been known for a long time that all bodies possessed to a certain degree the property of heaviness, thus this was a general law. Newton saw an apple fall to the earth from a tree, in consequence of this heaviness, and asked himself why the apple did not fall towards the sky. Investigating this question further he discovered the new law that bodies were attracted along radii directed towards the center of the earth. Turning his attention to the heavens and seeing the phenomena of the earth repeated there on a grand scale, he discovered the still higher law describing the mutual attraction of the heavenly bodies—a law which has recently been confirmed, in one of the greatest triumphs of human assiduity, by the discovery of a new planet. Newton went further, however, and formulated a hypothesis which he could not prove since the available facts were not sufficient for this, the hypothesis of

the existence of a mutual attraction between all matter. This hypothesis, a generalization of a proven law, a rational logical consequence of this law, was itself elevated to the position of a law by the reflections of the following centuries.

Scientific investigation proceeds therefore in the following manner: a phenomenon of general occurrence is elevated to the position of a law, and, when this law is applied to things which have not yet been discovered, a hypothesis is set up. Evidence is then gathered for the proof of, or better, for the testing of, this hypothesis in order to find a new law. Hypothesis is thus an essential part of scientific investigation, for it represents the thinking which must precede every rational action. To an equal degree analogy belongs to scientific investigation, for it is precisely by the drawing of analogies that the generalization of a known law to form a new hypothesis is carried out. The hypotheses and analogies in themselves have no value in scientific investigation except to the extent that they function as entering wedges for further investigation. The interest which our hypotheses have for us is thereby explained, for they are the growing and developing laws on which we test our strength, while the already discovered and firmly established facts belong to a past which every moment makes more alien to us.

Let us now take an example from the field of pathological anatomy. Cruveilhier found it generally recognized that the loss of the lumen of inflamed veins in phlebitis was due to the presence of some kind of material of firm, semi-firm or soft consistency. Thus this was a rule of pathological anatomy. Through his own investigations Cruveilhier further discovered that a blood clot could be found in the lumen prior to the appearance of any kind of change in the venous wall. This constituted a new and more definite regularity. The question then arose, how did the blood come to clot at this particular site? Cruveilhier carried his investigations no further but, with the aid of a hypothesis and a combination of findings, derived the more general rule that the first result of venous inflammation was the coagulation of venous blood. From this a new question resulted—in what way did inflammation bring about the coagulation of venous blood? Cruveilhier did not investigate this point either, but, with the aid of a new hypothesis and a new combination of the findings, derived a third and most general rule: that the inflammatory process consisted wholly in the coagulation of the venous blood within the lumen. Finally, out of the puzzlement over the occurrence of phlebitis in the large vessels, the conception of capillary phlebitis arose. In this state the question was handed over to the Austrian pathological anatomists. Now, in the investi-

gation of infarcts associated with hemoptysis, which had, up to then, been regarded as extravasates in the lung parenchyma, Bochdalek found that branches of the pulmonary artery were occasionally filled with bloodclot and thereupon drew the following conclusion: since inflammation is equivalent to intravascular venous clotting, and, since in lung infarcts of the kind associated with hemoptysis clots are found in the pulmonary arteries, consequently this type of infarct represents an inflammation of the pulmonary arteries. It did not escape Bochdalek that occlusion of the pulmonary arteries by clots was at times not present, but, since he had deduced the role from cases where clots were present, he could now say that this did not constitute a proof to the contrary since in such cases the inflammatory process occurred in the capillaries! Rokitansky moved one step farther. Because of their peculiarity I want to give his own words: "Inflammation of the splenic pulp has not yet been demonstrated; the splenitis described in pathological anatomy is, according to its location, a phlebitis, i. e., an inflammation of the numerous interwining and anastomosing venous channels of the spleen. One has, indeed, only to apply to a venous aggregate that which is known of venous inflammation (phlebitis) in order to derive a perfectly correct picture of inflammation in the spleen. The same thing which occurs in a simple blood-vessel occurs there in a complicated arrangement of veins." Let us now listen to what has been taught about capillary phlebitis. "In the capillary system the demonstration of clotting in the vascular lumina involves many difficulties. It is evident that, in addition to the processes within the vessels and as a consequence of these, an exudation of serum, and even of some plasma with blood pigment, occurs. The vessels are obscured and made unrecognizable by this exudation. But, on account of the occurrence of the process in the great vessels, there ought to be hardly any doubt of its existence in the capillary vessels as well." The procedure of proof goes as follows: the spleen is an aggregate of venous channels, inflammation of venous channels is equivalent to coagulation of the blood, consequently inflammation of the spleen is equivalent to coagulation of the blood in the splenic vessels. This argument includes, in addition, a *petitio principii*.

Thus the method in pathological anatomy. What is the starting point for the pathological-anatomical proof of the existence of a capillary phlebitis? The circumstance, that it is not known how blood comes to clot in large vessels. And how does the question as to the means by which phlebitis causes clotting arise? Because nobody considered that clotting of blood might bring about inflammation of the vein. In what way does pathological anatomy here differentiate itself from physics? In the patho-

logical anatomy derives a law from a hypothesis, while physics derives a hypothesis from a law; so that pathological anatomy moves from hypothesis to hypothesis and physics moves from law to law.

Pathological anatomy owes, in large part, the great importance which it has taken on in modern times to ignorance, specifically, to a complete lack of acquaintance with its history. Although care seems to have been taken to burn all historical bridges behind us, it seems proper to the strict and just custom of German science, in particular, that they should be reconstructed. There is no longer a place for pathological anatomy as a dogmatic science; everyone must be clearly aware of the proofs for each law. But where to obtain proofs if the whole argument begins with a hypothesis? I could introduce many more similar instances, e. g., from the doctrine of crases; I will limit myself to the conclusion that pathological anatomy is an anatomical science, really, not a physiological one, and it can therefore make decisions concerning purely anatomical questions with the greatest of security, but, concerning physiological questions, only with great insecurity. Objects which we see only in their spatial relationships are supposed to be brought into a temporal and causal relationship. Is pathological anatomy able to do this in a precise scientific manner? Certainly, in some instances, and in a much larger number of cases than might appear at first sight when the approach is made in a sufficiently unprejudiced manner; very frequently not at all. Although the most empirical and casuistic of all sciences, pathological anatomy as practiced up to the present time can only become a modern panegyrist of hypothesis. For how can one decide with certainty which of two coexistent phenomena is the cause and which the effect, whether one of them is the cause at all instead of both being effects of a third cause, or even whether both are effects of two entirely unrelated causes? The final decision in these matters belongs to a science which at the present time consists only in rudiments and which appears destined to replace general pathology; I refer to pathological physiology. We define pathological physiology as the essential theoretical part of scientific medicine. " Theoretical " is obviously not the same as " hypothetical " since the former starts from observation and the latter from arbitrary decision. Pathological anatomy is the doctrine of deranged structure and pathological physiology is the doctrine of deranged function. It includes, therefore, pathological changes of the blood, phenomena of abnormal circulation, respiration, nutrition and secretion, the study of exudation and the metamorphoses which occur in it—in other words the development of pathological processes—and finally, the study of altered muscle and nerve activity. It might seem as if all of this were very

simple, as if one had merely to write out the laws of ordinary physiology and apply them to the several pathological processes. If physiology were complete, this might perhaps be correct; however, physiology is, though a "respectable" science, yet this far a very incomplete one. When detailed questions are asked one receives, often enough, a Delphic answer only. Physiology is not entirely responsible for this, since the detailed questions have hardly yet been placed before her by pathology. What remains now to be done? The most comfortable and well-trodden way is to pass over such places with the aid of flying bridges of hypothesis and analogy. But if somebody follows behind with a more heavily laden wagon the flimsy bridges collapse, if, indeed, they are still standing, and a state of sorry perplexity overcomes the leaders. It is for this reason that a pathological physiology is necessary, a physiology which does not stand before the gates of medicine, but lives in its mansion, a science which knows exactly what medicine lacks, what investigations are required, and what questions need to be answered. Pathological physiology receives its question in part from pathological anatomy, in part from practical medicine; it derives its answers partly from observation by the sickbed, to this extent being a division of the clinic, and partly from animal experiment. Experiment is the final and highest court of pathological physiology, for experiment alone is equally accessible to the entire world of medicine, and experiment alone shows the specific phenomenon in its dependency on specific conditions, for these conditions are arranged by choice.

A few examples will make my point clearer. In the course of the numerous investigations which have been devoted to diseases of the lungs in recent times, it appeared necessary and logically justifiable to search for the basis of certain pathological pulmonary processes in alterations of the circulatory apparatus. Now what could be learned from physiology about the circulation in the lungs? Physiology knew two things about it, firstly, that venous blood became arterial in the pulmonary capillaries and, secondly, that respiratory movements exercised a certain degree of influence over the movement of the blood. The first factor was itself without meaning for diseases of the organ; from the second, however, it was deduced that the origin of pneumonia was dependent on alterations in respiratory movements causing a stasis of blood in the pulmonary artery and capillaries, and whose correction, therefore, required mechanical intervention in some measure. Using a proof by analogy based on the behavior of the systematic arteries, pulmonary gangrene was construed to be dependent on the blockage of the pulmonary artery which had been observed in such cases. These deductions were just as arbitrary as they

were characteristic of the hypothetical-philosophical method. The bronchial arteries were simply overlooked because the physiological textbooks no longer discussed the questions of whether the blood in the pulmonary artery had any function other than in connection with respiration, and whether the bronchial arteries sufficed to satisfy the entire nutritional requirements of the lungs. Now, as I engaged in experiments in this matter, it became obvious that a most extensive pneumonia could be produced by complete blockage of the pulmonary artery to one lobe and that pulmonary gangrene did not manifest itself as a result of this complete blockage. It was further shown that after two and one-half months of complete blockage atrophy did not occur. Instead, a collateral circulation developed which made a mockery of all accepted views about development of collateral circulations. This circulation did not arise from out of the pulmonary arterial bed but from the aorta through the bronchial and intercostal arteries, occurring in exactly the same manner as had already been demonstrated after blockage of the pulmonary artery resulting from extensive destruction in tuberculosis; it was therefore possible to derive a general rule for pulmonary collateral circulation.

Another example: saltpeter, it is said, has a beneficial effect on inflammations. Previously a cooling and moderating effect had been spoken of, something fundamentally related to the nervous system. The new humoral pathology, however, appeared to reject this point of view completely. Scientific therapy, for its part not to be satisfied with the simple empirical fact on very good grounds, had to have a more definite idea of the effect of saltpeter, but could demand from physiology no information at all concerning this point, for its investigation belonged to pathology, that is, to pathological physiology. Organic chemistry, however, which in recent years has moved so close to medicine, had meanwhile made a discovery long known to the older physicians, namely, that saltpeter dissolved clotted fibrous material. Now it was known from other investigations, themselves long known to the older physicians, that the fibrin content of the blood was increased in inflammation. To be sure, this was fluid, not clotted, fibrin. What, however, could be more natural than that saltpeter taken internally made the fluid fibrin still more fluid, from which an extraordinary fluidity of the whole blood resulted! Whether the clotted fibrin of the exudate was actually dissolved by one or two drams of saltpeter which the patient took during the day was left still undecided. A short time ago Hertwig published experiments on animals according to which the use of nitrum internally increases the fibrin content of the blood. Saltpeter is thus again an empirical remedy.

Once again, therefore, let us not deceive ourselves about the present state of medicine! It is undeniable that our spirits are exhausted by the innumerable hypothetical systems which are constantly being thrown to the winds and replaced by new ones. A few more mishaps, however, and this time of disturbance will have passed by and it will be understood that only calm, industrious and steady work, true work of observation or experiment, has permanent value. Pathological physiology will then gradually come to development, not as the creation of a few overheated heads, but as the resultant of many painstaking investigators; a pathological physiology as the fortress of scientific medicine on which pathological anatomy and the clinic are only the outworks!

DAVID MONRO'S LECTURE ON THE EXPRESSION OF PASSION, 1840

REX E. WRIGHT-ST CLAIR

In 1954 there came into the possession of the University of Otago Medical School, Dunedin, New Zealand, a quarto manuscript of some thirty leaves inscribed on the front, " D[r] David Monro's Lectures on expression delivered in 1839 & 1840 at the Royal Institution to the Artists of Edinburgh." At the top of the first page of writing is the title, " Lecture on the Expression of Passion."

David Monro was the fourth son and seventh child of Professor Alexander Monro *tertius*, the last of the famous Monro dynasty which held the Chair of Anatomy and Surgery [1] in the University of Edinburgh for a century and a quarter. David, who was born in 1813 and graduated M. D. at Edinburgh in 1835, was the only son of Monro *tertius* who held a degree in medicine, although the second son, James, was an army surgeon.[2] After qualifying, David undertook post-graduate studies in London, Paris, and Berlin, returning home in 1838, when he became Assistant in Anatomy to his father. In 1841, having paid £1200 to the New Zealand Company for the purchase of land in that Colony, he sailed for Australia as ship's surgeon on " Tasmania " of 502 tons. He spent some months with his elder brother, Henry, who was sheep-farming in Australia, and in 1842 arrived in the newly-established settlement of Nelson in the South Island of New Zealand. Here he took up his allotments of land, totalling several thousand acres, and became a highly successful sheep-farmer.

Monro did not practise medicine actively in New Zealand, but frequently attended his friends and neighbors, and sometimes saw cases in consultation at the request of other practitioners. He was one of the most noteworthy botanists of the Colony at that period, and carried out exploratory and botanical work in various parts of the South Island: some 250 plant specimens sent by him to Sir William Hooker at Kew Gardens in London are still preserved there. From the time of his arrival

[1] Because of his inadequacy, surgical teaching was gradually taken from Monro *tertius*, but he had been appointed " ad vitam aut culpam " and refused to relinquish the surgical portion of his title.

[2] See J. A. Inglis, *The Monros of Auchinbowie*, Edinburgh (1911).

in the Colony Monro took a most active part in local politics, his education, experience and temperament fitting him to be a leader of the landowning settlers. In 1853 he was elected to the first New Zealand Parliament from which he finally resigned twenty years later. From 1861 to 1870 he served as Speaker of the House of Representatives, and for his services in this capacity he was knighted in 1866. He was a forceful and fluent orator, and a resolute and intrepid politician who had a considerable effect on the development of the infant legislature of the Colony. Sir David Monro died in Nelson in 1877, aged 63, without ever revisiting the homeland he had left thirty-six years before.

The will of Professor Monro *tertius*, drawn in 1837, before David had decided to emigrate to New Zealand, includes this clause: ". . . to Doctor David Monro my fourth son and failing him by decease to Doctor James Monro my second son . . . my Anatomical Museum and Anatomical Drawings and Copperplates and all my Medical Books and Manuscripts and copyrights of Medical Books. . . ."[3] Accordingly, on the death of Monro *tertius* in 1859, his medical books and manuscripts were sent out to David, who in turn bequeathed them to his son-in-law, Sir James Hector, M. D. (Edin.), F. R. S., Director of the New Zealand Geological Survey. This material now forms the Monro Collection in the Otago Medical School Library. I have no certain knowledge of the fate of the Anatomical Museum, but it was probably sold in Edinburgh. David Monro's balance sheet for 1861 includes under Assets, " Patrimony, say £4,000."

The lecture on expression was not included with the Monro Collection, and its movements are not known until 1949, when it was found among the papers of the late Mrs. Constance Saxby after her death. Mrs. Saxby was a daughter of Sir James Hector and his wife, Georgiana Monro; her son, Mr. S. H. Saxby, has now given the manuscript to the Otago Medical School. The lecture is written throughout in David Monro's own handwriting. One side only of each leaf has originally been used, but in some cases inserts or corrections have been added on the blank facing page. The lecture is here reproduced in what appears to me to be the form and order in which it was intended to be delivered. It was evidently the last of the series of lectures referred to on the title page. Monro was himself an accomplished artist, and may therefore be considered well qualified to lecture on this subject. The whole work

[3] From the copy of the will sent to David Monro by Patrick, McEwen and Carment, Solicitors, of Edinburgh, and now in the possession of Miss L. C. Monro.

gives an interesting insight into the philosophy and teachings of the Edinburgh school of anatomy near the end of the long Monro period.

Lecture on the Expression of Passion

The passions & emotions which agitate the mind have all their corresponding signs in the exterior of the body: thus is one man made aware of what is passing in the breast of another, and reading in his figure whether he fears, loves, or hates can prepare himself accordingly.

It has been argued that it is by experience alone that we acquire a knowledge of this outward language of the passions, that because a blow has been accompanied by contracted eyebrows & set teeth & a benefit by a smiling face we at length by a natural process of association connect them together & interpret the expression according to its hitherto observed effects: but this appears to me an untenable proposition; we see the expression of pain portrayed by the infant from its first moment of existence as faithfully as ever afterwards in the course of its life, and its smile is perfect before its reasoning faculties have been developed, & so I think there can be little doubt that what is thus instinctively performed is in the same manner instinctively understood. The contrary argument would indeed imply an oversight in the allwise Creator of the world: the outward expression of the passions not only in man, but in animals has been undoubtedly ordained for the greater safety of their fellows, & were it by education alone that we acquired the grammar of this language, we might be exposed to a thousand risks or die if it were possible a thousand deaths not only by our fellow creatures, but by the brute creation before we had acquired the necessary experience.

We must conceive then, I imagine, that our interpretation of expression is instinctive, not acquired by experience, and while this accounts for its perfection (in common with that of all actions regulated by the same principle) it will also in some measure account for the difficulty we experience in giving a faithful imitation of it, since that which we have acquired without any trouble, has never been analysed or reasoned upon. But from the same cause we are admirable judges of expression: our eye at once instinctively informs us whether the artist has succeeded in what he aimed at, without our knowing why he is right or if he has erred, where his mistake lies: the knowledge of expression requisite for this is only to be attained by a careful observation of the play of the features & limbs upon which it depends: in this, one of the highest aims of the artist we shall derive great assistance from a knowledge of Anatomy, &

a comparison of the instruments of expression in man with those of the inferior animals.

When I use the word expression, I do not use it in the sense which limits it to the countenance, but I understand by it every appearance on the surface of the body which reveals to us the state of the mind.

The passions make themselves known externally in four different manners. 1. by the countenance. 2. by the general attitude of the body & limbs. 3. by the colour of the skin. 4. by the voice independently of articulate sounds. The 3 first are strictly within the province of art & deserve the most careful study: the painter or sculptor can also represent an exclamation by giving to the organs of voice the position which is connected with it, but this he will seldom be called upon to do.

When we consider the great variety of moods of the human mind, the numberless passions and emotions by which it is affected, we must expect on examining the instrument by which these are to be outwardly exhibited, to find an apparatus of much complexity.

Accordingly we saw when we studied the muscles of the human face, that tho' not powerful they were exceedingly numerous, crossing one another and so arranged as to be capable of pulling the skin of the face in any direction. But before proceeding to consider how they are affected by different states of mind, it will give us a still clearer idea of the structure of the face as an instrument of expression, if we compare it with that of some of the most familiar inferior animals: following Sir C. Bell,[4] who is our principal authority on the Anatomy of expression let us take a look at the heads of the horse and the dog, the latter taken as you know from the carnivorous, the former from among the graminivorous animals, two classes of animals necessarily differing widely in Structure habits & propensities. As a general rule, the carnivorous animals have greater play of expression than the graminivorous: ferocity is the passion most powerfully displayed in the brute creation, and taking along with it sexual excitement and fear we have perhaps the whole range of emotion of which the inferior animals are capable. Rage is displayed with particular intensity in the heads of carnivorous animals: by the laying back of the ears, uncasing of their tusks, retraction of the upper lip & by the whole attitude of the animal. The habits of the class too require a greater degree of cerebral development than in the graminivorous: to overtake their prey, caution, patience and cunning are requisite: in the

[4] Sir Charles Bell (1774-1842), the great anatomist and neurologist, was at this time Professor of Surgery at Edinburgh. In 1806 he published *Essays on the Anatomy of Expression in Painting* (London, 1806), a work that went through several editions.

attack, courage and manoeuvre. The graminivorous animal, who finds his nourishment at his feet leads a very different life: his mode of existence is more tranquil & indolent, agitated only by an occasional alarm, or by the sexual appetite at a particular season. That expression which we have said, shews itself more strongly than any other in the brute head, viz. ferociousness is in them almost entirely wanting: the powerful play of features seen in the Tiger before attacking his victim, has in them no parallel: their habitual expression is mild & peaceable.

The dog, whom we have selected from among the carnivorous animals is a much more intelligent animal than the horse, belonging to the other class: in his head there is consequently more expression & looking at its anatomy, we find a structure much better calculated for its display, but bearing in mind the Anatomy of the human face, we see how very far both of them fall behind it as instruments of expression. In the dog, we find the eye level with the head, no eyebrow, consequently none of that expression which is given so abundantly by the raising or lowering of these parts: but in him we find some small accessory muscles arising from the forehead and inserted into the upper eyelid: these have been called by Sir C. Bell Scintillantes, because they draw back the eyelids from the eyeball and give a sparkling fierceness to the eye. 2^{dly} there is a large surface of lower jaw, a part in which no expression resides: 3^{dly} the motions of the lips are most imperfect, the under one hanging almost unsupported, & the upper one tied down at the point of the nose: behind this point however there are inserted into the upper lip, exactly where it covers the canine teeth some strong muscular fibres which Sir C. Bell has very aptly named ringantes or snarlers, because by their action they retract the lip & expose the teeth. Such a structure may be taken as the type of the carnivorous animals.

Let us now look back to the horse: in his head we find a large surface of skin closely bound down to his forehead & long nose, without motion consequently without expression: we have a large surface of lower jaw in the same predicament: the principal character of his head is to be found in his nostrils, eyes & ears: the strongest muscles are inserted about the nostrils, tending to expand them, & into the lips: hence the expanded nostril is the character of the fiery horse: his eye like that of the dogs is level with the surface of his head, or rather prominent: it is surrounded as in man by a circular muscle which by its contraction gives a certain shade to the eye: in his large pupil, & white at the corner of the eye, there is much expression: lastly from the position of his ears we discover his disposition. When fresh, they are pointed forwards listening

to every object, when he is tired, they hang back listlessly, & when he meditates mischief, they are laid entirely back upon his neck. Sir C. Bell says that this is done by a consent between the motions of the eye & the ear, & that the latter follows the former from this cause when he directs it backwards to aim a blow with his heels: this does not appear to me the correct explanation: a horse lays back his ears as well when he rushes forwards to bite as when he turns round & kicks: his reason in doing so I believe to be, that he may put his ears as much out of danger as possible.

Thus we see that the arrangement of the muscles of the dog's face tends to the manifestation of his nature in especial, i. e. that the predominating expression of his head is ferociousness: the same holds good of all other carnivorous animals. The dog has however more expression in his countenance than any other animal: the muscles of his ears, when these are erected as when he is listening throw the skin of his forehead into folds & give to his brow a certain air of sagacity; & every one must have observed the sudden lighting up & joy of his appearance, when he suddenly observes his master, lays his ears back & gallops up to him.

The horse's head is peculiarly destitute of expression: his character is peaceable: but it is only in a state of agitation that there is a play of feature: when excited his expanded & snorting nostrils, his brilliant eye, & his arched neck, are the principal sources of expression. He does not recognize his master with the same demonstrations of friendship as the dog, nor indeed does he seem capable of the same amount of attachment.

There is nothing that artists in general have failed in so much as in giving to animals' heads their proper expression. A mistake very commonly committed is that of representing the horse in his wild state, or unharnessed with his mouth open, and this by way of giving him a spirited appearance. But it is a mistake: a horse with a bit in his mouth has his jaws sometimes pulled separate or opens his mouth to champ the bit, but observe him when at grass, or observe the race horse when the race is over & the jockey has dismounted: his mouth is close shut, but the activity of his respiration is indicated by his fiery & expanded nostril and the rapidity with which it rises & sinks.

But in the human mind there are not only the animal propensities, but likewise the moral & intellectual feelings which in brutes are nearly if not entirely wanting. The countenance of man must therefore be adapted for the manifestation of these three classes of functions, and while it can be agitated by expressions which it shares in common with the lower classes of the animal kingdom, it will be ennobled by others which demonstrate

capacities & feelings of a higher order and render it worthy of the type upon which it was created, the image of the Deity. " When we turn our attention to the muscles of the human countenance, says Sir C. Bell, we perceive that while the motions of the lips & nostrils have not the same extensive range as in the several classes of animals, there is combined in the face of man a capacity for all the variety of expressions which distinguish the several kinds of whose nature he partakes. He stands as it were between the carnivorous and graminivorous animals, or rather it were correct to say that he partakes of the nature of both. He has the snarling muscles which we have observed so peculiarly to distinguish the carnivorous animals, while he is able to protrude the lips, and uncover the incisors. In the carnivorous animals we have seen that while the muscles that descend from the bones of the cheek and upper jaw to raise the lips are very strong, the orbicular or circular fibres of the lips are very imperfect, the lip being tied down at the fore part to the gums. In the graminivorous animals on the contrary, the orbicular muscle is nearly perfect, while the elevating and depressing muscles of the side of the mouth are deficient. But in man, both these classes of muscles are combined: the elevating and depressing muscles are perfect, while the orbicular muscle completely antagonizes them, modulating and qualifying their actions, and bestowing the utmost perfection on the motion of the lips."

The human countenance is distinguished looking upon it as an instrument of expression from that of all other animals by the amplitude, smoothness & mobility of its forehead, by the eyebrows & deep setting of the eyes, by the smallness of the mouth, fleshiness & mobility of the lips, and by the chin. These peculiarities developed to the utmost extent consonant with the perfect performance of their functions, & combined with those proportions which are most characteristic of the human head, constitute human beauty, not I apprehend because they are unlike anything in the animal kingdom, but because they constitute that arrangement of parts which is in most complete harmony with the human œconomy & gives us the greatest idea of fitness.

The principle, that human beauty consists in that which is furthest removed from the features of the brute appears to me erroneous, at the same time that as a matter of fact there is much truth included in it. The features of a horse or a dog or a baboon are unsuited to our œconomy, because they are incapable of expressing all the play of emotion which our minds experience: but we have parts in common with them which express passions which are likewise in common, and if you take away from the force of these, you mutilate the human face. One of the principal distinc-

tions between the bones of the head in man & the inferior animals is the small size of his superior maxilla: but it has in man its standard size of fitness, & if you push its dissimilarity to the inferior animals beyond this, you defeat your object. In the same manner man is characterised by the smallness of his teeth, but everyone knows that nothing is more beautiful than a set of teeth of regular shape & size: if they are too small, the mouth is imperfect.

I would therefore say that human beauty differs almost in every point from the beauty of the brute, because the Nature of man is so very different, & consequently requires a very different organization. If the principle be laid down, that human beauty is to be attained by representing a set of features in which every resemblance to the higher orders of the inferior animals is as far as possible to be suppressed, the result will almost certainly be error. The human head & human expression should be studied for themselves: the study of the heads of brutes is of greatest use in assisting us, in the same way as Comparative Anatomy is to Anatomy, by shewing us the same organ under different modifications and thereby leading us to a correct view of its proper uses & functions.

It is in the inner angle of the eyebrow & the corners of the mouth that expression in the human countenance principally resides: according to the direction in which these parts are drawn, is the character of the face entirely changed. "To demonstrate the importance of these features Pietro di Cortona [5] performed the following experiment before Francis the first of France: he drew a countenance unmoved by passion, & then touching lightly with his pencil these parts he shewed that monarch that according as he gave them a direction upwards or downwards, he produced the expression laughter or of grief."

It is in fact in these two parts of the face, that we find the principal concentration of muscular insertion: above the inner angle of the eyebrow, we have the corrugator supercilii a muscle peculiar to man which throws the skin into vertical folds and gives the appearance of mental exertion: then we have a slip of the occipito frontalis which descends upon the nose on each side & pulls the angle of the eyebrow downwards & lastly we have the orbicularis muscle of the eyelids, which connected likewise with the eyebrows pulls them downwards and inwards. At the corners of the mouth we have not only the orbicular muscle which controls the motion of the whole, but likewise the Zygomatics, the levators, and the depressor anguli oris.

[5] Pietro Berettini da Cortona (1596-1669), Italian painter.

The passions as regards their origin may be classed under two heads, those which arise from the desire to obtain some good real or imaginary, and those which arise in the wish to avoid some evil. The former have been called the exciting the latter the depressing passions. Laughter & weeping stand by themselves: the former being the manifestation of pleasurable impressions upon the faculty of fancy: the latter an expression of grief more particularly in women & children: in a man it will hardly ever be represented in art, as it always conveys a mean or ludicrous idea.

The exciting passions & pleasurable emotions are all expressed by a raising of the features, even by a general raising of the body: thus when a joyous piece of intelligence is received, not only does the face brighten up as it is said, that is, the eyebrows are raised & the corners of the mouth drawn upwards into a smile, but very often pleasure is still further testified by jumping & clapping of the hands.

But in sorrow, the features fall: the brows are lowered, the mouth drawn downwards at the corners: the hands hang listlessly by the side, the head droops, and if excessive, the person sinks to the ground. We find the effects of these two states recognized & expressed in ordinary language: thus we talk of buoyant spirits, and on the other hand of a person sinking under a load of grief, or overwhelmed by sorrow.

It would be imposible to point out to you the arrangement of feature corresponding to every passion or mental emotion. The execution of such a task would be endless, for the shades of passion & its combinations are infinite, and each has its characteristic sign: it will be enough for me to point out the characters of some of the most striking forms of expression and to indicate to you their connection with Anatomy. As I have stated before, it is principally as an instrument of observation that I look upon Anatomy with regard to its utility to the artist: unless he is constantly upon the watch to observe & note down every varying phase of Nature, he cannot expect to succeed: indeed the use of a great part of his study is to assist him in this, to enable him to explain to himself what he sees, to lead him to a knowledge of sound principles, & to direct his practice by science.

We may begin by laughter. (head from Sir C. Bell) You will observe in this head the general tendency upwards of which I have spoken: the mouth is drawn up at the corners: the eyebrows are likewise drawn up & the skin of the forehead thrown into horizontal folds. The alæ of the nose are pulled upwards & outwards by their appropriate muscles. In laughing, says Sir C. Bell, it is in vain that we attempt to confine or purse the lips: a complete relaxation of the orbicular muscle of the mouth gives

an uncontrolled power to the opponent muscles, to those which concentrate to the angle of the mouth and the upper lip. Hence the lateral drawing of the lips, the elevation of the upper lip disclosing the teeth, the very peculiar elevation of the nostrils without their being expanded (for we breathe only through the mouth in laughing:) hence too the dimple in the cheek, where the acting muscles congregate: and hence the fulness of the cheek, rising so as to conceal the eye & throw wrinkles about the lower eyelids & the temples, whilst the skin of the chin is drawn tight by the retraction of the cheeks and the opening of the jaws. Thus it is obvious that the whole moveable features are raised upwards. The orbicular muscles of the eyelids do not partake of the relaxation of the mouth: they are excited so as to contract the eyelids & sink the eye, whilst the struggle of a voluntary effort of the muscles to open the eyelids & raise the eyebrow gives a twinkle to the eye & a peculiar obliquity to the eyebrow, the outer part of it being most elevated. At the same time in laughing, the respiratory muscles, the diaphragm, & muscles of the ribs are violently agitated so as to produce a painful feeling in the side against which the hands are pressed to give support: from this interruption to the respiration, the face is flushed, the eyes are bloodshot & discharge tears: lastly the peculiar sound in the throat is as characteristic as the visible signs.

" Between the expression of laughter and that of weeping says Leonardo da Vinci there is no difference in the motion of the features either in the eyes mouth or cheeks: only in the ruffling of the brows, which is added when weeping, but more elevated and extended in laughing." And again he says, " Those who weep, raise the brows, and bring them close together above the nose, forming many wrinkles on the forehead, and the corners of the mouth are turned downwards." The Anatomical explanation is, that the orbicular muscles of the eyes are firmly closed drawing down the eyebrows & skin of the forehead, while the corrugators are thrown into action producing folds in the vertical direction: the nostrils are distended by the levators. The corners of the mouth are drawn powerfully outwards by the combined muscles, but the action of the depressor preponderates & they are pulled downwards: at the same time, the under lip is raised in its middle portion by its proper levator, which likewise tightens the chin. The face is flushed, more so than in laughing, but from the same cause and the veins of the forehead are turgid: the general action of the body will correspond with the supposed cause of the weeping. " Some, says Leon. da Vinci, weep for anger, some through fear, others for tenderness and joy, or for suspicion: some for real pain and torment: whilst others weep through compassion, or regret at the loss of some

friend or near relation. These different feelings will be expressed by some with marks of despair, by others with moderation: some only shed tears, others cry aloud, while another has his face turned towards heaven, with his hands depressed, and his fingers twisted: some again will be full of apprehension, with their shoulders raised up to their ears, & so on according to the above causes."

If we now proceed to the consideration of the animal passions, we may approach that one which we have seen to be more strongly marked than any other, viz. rage. "When rage takes possession of the soul says Lebrun,[6] he who feels that passion, has the eyes red and inflamed, the pupil wandering & sparkling, the eyebrows now raised, now lowered; the forehead will appear strongly furrowed, with folds between the eyes, the nostrils will be widely opened, the lips pressed against one another, but the under lip will surmount the upper one, leaving the corners of the mouth a little open, forming a cruel & disdainful laugh. He will appear to grind his teeth, saliva will appear at his mouth, his countenance will be pale in some parts, inflamed in others & swollen: the veins of his forehead, temples & neck will be gorged, his hair erect, & instead of breathing he seems to puff himself up, because the heart is oppressed by the abundance of the blood which comes to it."

Under the influence of violent rage, there is a general contraction & quiver of all the muscles of the body & a preparation for action. The appearance of the countenance seems to result from this: the features are acted upon by all their muscles & of course follow the direction of the strongest: the forehead is thrown into folds in all directions: the orbicular muscles of the eyes contract producing wrinkles about the outer angles of the eye, while the upper eyelid is pulled back by the action of its levator muscle & a belt of white is seen above the pupil. The nose is stretched & inflated: but it is in the mouth that the expression of rage is most characteristic & brutal for it is the same expression that we see in the dog or the tiger: the mouth is pulled violently outwards at the corners which are separated by the action of the levator labii superioris above & the depressor labii inferioris below: thus are the teeth exposed firmly pressed against one another, but particularly the canine teeth: the general appearance of the body is well described by Lebrun: but the veins of the surface are gorged not because the heart is oppressed by the quantity of blood which comes to it, but because from the irregular Respiration, the blood cannot pass readily through the lungs, and a degree of stoppage &

[6] Charles Le Brun (1619-1690), official painter to King Louis XIV of France, and largely responsible for the decorations in the Palace of Versailles.

turgescence of the vessels which empty themselves into the right side of the heart is produced.

The countenance & attitude of fear are easily understood: let us suppose for instance a person walking in the dusk suddenly to stumble on an unknown object of suspicious appearance: he stands still & fixes his eyes steadily upon it: his expression will now be very nearly that which Lebrun has under "Admiration" or wondering. In the words of that author, "the eye will be a little more open than usual, the pupil equally placed between the two eyelids, & without motion, fixed upon the object. The mouth will be a little open, but without change of form any more than the other parts of the face." Suppose now that the result of this scrutiny is unfavourable and that the object is discovered to be one pregnant with danger: the sketch which Lebrun gives of horror will correspond to the expression: the eyes are more widely opened, & the white is seen above the pupil: the brows are knit indicating the mental anguish, the mouth still open, drawn downwards at the corners, the face is pale, the body shrinking back & vacillating. If we now suppose the dreaded object to advance, terror is depicted in its greatest force, represented by Lebrun in his two sketches of Frayeur. The face is deadly pale & covered with a cold perspiration: the hair stands on end: the knees totter: the hands are stretched out to avert the horrible object, the scream of despair is heard, & the person sinks upon the ground. I may remark that Lebrun's two sketches of this state are both imperfect: the first decidedly wants character, particularly in the forehead & eyes, and as they are both evidently uttering a scream the position of the head & neck is faulty: from it particularly in the second, we argue that the person is flying, but while making such an exertion, screams are rarely heard: the muscles of the chest have quite enough to do to keep up the Respiration & assist in the movements of the body: a hare when coursed never screams till she can run no more, or has been seized by the greyhounds: it is when escape is impossible & further effort unavailing that anguish finds vent in cries.

How much more powerful is this sketch after Sir C. Bell: in the forehead there is dreadful suffering: flight is hopeless and is not attempted: but Nature is shrinking from the horrible apparition: the head is thrown backwards: the hands ward it off, in the mouth there is a coarse yell & all the muscles of Respiration are in strong convulsion. The rationale of these symptoms is not difficult: when the object is first perceived, the gaze is fixed steadily upon it the eyes are widely opened & the eyebrows raised: it absorbs the attention: the necessary volition is not made for

the action of other muscles: the jaw drops & the mouth opens: this however is not essential to the expression. As soon as the dangerous qualities are perceived, the mental anxiety is made manifest by a downward motion of the corners of the eyebrows & mouth. The eyes are fixed still more steadily upon it, watching its movements: the Respiration is slow & laborious, but the face instead of being flushed is pale, for fright has a directly sedative action upon the Heart, and even though the passage of the blood through the Lungs is impeded, there is no stagnation about the head, for the blood is not driven with its usual force into the vessels. From this cause, there may be giddiness or fainting, or the Nervous energy not properly stimulating the muscles, they quiver & the person at last falls to the ground. Lavater [7] divides the face into three regions, the upper part being that of intellectual life, the middle of moral, and the lower of animal life. This is perhaps rather arbitrary, but has undoubtedly some degree of natural foundation: thus thought is principally expressed by the wrinkled forehead, rage by the mouth, but the eye is used in the expression of every passion & emotion, whether animal, moral or intellectual.

If a sage or philosopher is to be represented, the brow should be ample & furrowed vertically by the action of the corrugators: attention & reflexion are beautifully illustrated in the countenance of the audience in the famous picture of Paul preaching at Athens: at the same time there is a pouting & raising of the under lip, but this denotes perhaps more than attention, that the person is hearing something disagreeable, or something which is quite new, and shocks previously received ideas.

In representing the different moral affections, the same rule is to be borne in mind, which I have previously adverted to, that in those which are of an agreeable Nature, the features are elevated, while in those of an opposite character they are lowered. In joy, the brow is serene, the eyebrow slightly raised, as well as the mouth at the corners. In grief or despondency when not violently expressed, the eyebrows are slightly lowered in the middle, though raised at their inner angle: the eyelid droops so as to cover part of the pupil, the mouth is slightly drawn downwards & the lips apart. Contempt & aversion are expressed by lowering of the eyebrows, pouting of the under lip & the object is viewed not directly but sidewards.

Esteem has many degrees from simple love to Veneration: the former is expressed by a countenance indicative of pleasurable emotion. Venera-

[7] Johann Kaspar Lavater (1741-1801), Swiss clergyman, famous as the author of a system of physiognomy.

tion on the other hand, implies a degree of mental trouble: the direction of the features is therefore slightly downwards, but the eyes are directed upwards towards the heavens and this is more striking in consequence of the head being inclined forwards.

I might go on multiplying descriptions to any length, not only of simple but of compound passions, but I think I have brought forward enough to illustrate the subject: besides the power of delineating expression is not to be learnt by description or servile imitation: it requires a talent of a higher order, a feeling of poetry which any artist ought to possess & careful observation: it is in assisting him in this latter, that the remarks which I make may be useful. The varieties & combinations of expression are endless, but when guided by correct principles he will be able to distinguish & reproduce them and to give to the creatures of his imagination character & attitude in strict keeping with the circumstances in which they are placed.

I have now Gentlemen, brought the course to a termination. There are other subjects connected with your profession, to which Anatomy may be applied with advantage, which we have not touched upon. But I conceive, that those among you, to whom the study of Anatomy is new, will find in the ground that we have gone over quite enough to grapple with and study. If by what I have done, I have succeeded in clearly pointing out the importance & applicability of the study, and have given you a desire to further your acquaintance with it, I shall be perfectly satisfied. If I have succeeded in any measure in impressing you with the conviction which I feel myself that it is the only grammar to the language of correct design & beautiful form, my labor will not have been in vain. But the form is not the sole index to the state of the mind: the general attitude of the body, & in particular the position of the hands & arms is often most expressive. In the act of praying, for instance, how expressive is the attitude of kneeling & the clasping of the hands, & in rage how much the force of expression is added to by the clenching of the fists.

As Quintilian remarks of the hands, "For the parts of the body, says he, assist the speaker, but these, I may say, speak themselves. By them we ask, we promise, we invoke, we dismiss, we threaten, we intreat, we deprecate, we express fear, joy, grief, our doubts, our assent, our penitence: we shew moderation & profusion: we mark number & time." For the motions of the hands & arms in expression, Anatomy gives us no precise rules: they must be learnt I apprehend, by experience & observation. We may only mention as further proving the superiority of the

power of expression of the human body over every other animal's, that in man alone, do the anterior extremities serve such a purpose.

Acknowledgements: I wish to record my thanks to Sir Charles Hercus, Dean of the Medical School, University of Otago, for permission to publish this manuscript; to Mr. H. D. Erlam, Librarian to the Medical School, for his co-operation; and to Miss L. C. Monro, of Palmerston North, New Zealand, who has made available to me for biographical purposes the diaries and papers of her grandfather, Sir David Monro.

NOTES AND COMMENTS

THE FIRST ACCOUNT OF A MENINGIOMA *

MARTIN G. NETSKY AND JEAN LAPRESLE

Meningiomas are neoplasms that have a long historical past (1, 2). A skull with characteristic hyperostosis found in Peru was reported by Moodie (1) and identified as belonging to a pre-Columbian Inca. As far as is known, no examples of such cranial hyperostosis have been encountered in studies of Egyptian mummies (2). The earliest clinical and gross anatomic description of a meningioma accepted by Cushing and Eisenhardt (3) in their monograph was reported in 1743 by Kaufman (4). This was the case of a 34 year old Prussian soldier who had "distinguished himself equally well in the wars of Mars and of Venus." A firm, slowly growing tumor appeared at the top of his skull. At autopsy the calvaria was eroded, and the growth was attached to the dura mater. This case was included in a monograph published in 1774 by Antoine Louis on the "tumeurs fongueuses de la dure-mère." Louis cited 20 cases, mostly collected from the literature of the latter part of the 17th century, and the 18th century up to the time of publication. While not all of these "fungating tumors of the dura mater" were meningiomas, the expression fungous tumor was used widely until replaced by dural endothelioma and finally by the present name meningioma.

In the course of a study of meningiomas (6), we encountered an excellent clinical and anatomic description published in 1614 (7) by the Swiss physician Felix Plater (Platter). We believe this to be the first account of a meningioma.

Plater was born in 1536, lived a distinguished life, and died in his native town of Basel in 1614 at the age of 78. He was professor of medicine at the University of Basel for 43 years, and a member of a distinguished family of physicians. He was an extraordinarily able and brave man. When a series of plagues swept Basel he remained in the city, although his parents and servants were stricken and many of his professional colleagues fled. In 1559, he performed the first autopsy in Basel since Vesalius in 1531. His report given here indicates his insight into the need for autopsy study, at a time when physicians ran great risks

* From The Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, North Carolina.

in performing any kind of dissection. He was among the forerunners of the rational classification of disease by etiology. He had a clear knowledge of psychiatric disorders, which he classified into four types. Plater was the forerunner of Pinel in objecting to the prevelant barbarous treatment of the mentally ill, as pointed out by Cumston (8).

The *Observationum in hominis affectibus plerisque, corpori et animo, . . . libri tres* was published at the very end of his long life. The following translation is taken from the section " In mentis consternatione."

Lethargy or Insensibility Caused by a Round Acorn-like Tumor Formed on the Brain

Caspar Bonecurtius, a noble knight, began to lose his mind gradually over a two year period, to such an extent that finally he was completely stupefied and did nothing rationally. He had no desire for food and ate only when forcibly fed. He went to bed only when compelled, and sat at a table resting on his arms and sleeping almost all the time. He spoke only when questioned and frequently prodded, and even then his words were few and had little relevance. All the while watery mucous dropped copiously and frequently from his nostrils. Finally after matters had gone on thus for six months, he died.

In an investigation into the causes which might have occasioned the affliction, nothing definite could be discovered except a blow on the head (stab wound?) which had been struck three or four years previously, and because of which he began to experience thereafter mental weakness, since at other times in the past he had been in other respects a vigorous soldier, and had been subject to no such tribulation. Following his death, after his skull had been opened and the brain separated, there was discovered on top of the hard body (corpus callosum) of the brain a remarkable round fleshy tumor like an acorn. It was hard and full of holes and was as large as a medium-sized apple. It was covered with its own membrane and was entwined with veins. However, it was free of all connection with the matter of the brain, so much so that when it was removed by hand, it left behind a remarkable cavity. This was immediately filled with a watery fluid with which the ventricles had been completely extended, separated and filled. We perceived that this ball by compressing the brain and its ducts with its mass and by flooding them, had been the occasion of the lethargy and listlessness and finally of death. Although

at first some physicians maintained that the affliction resulted from poisoning and others that it resulted merely from humors, even as many physicians still ascribe diseases of the brain to these two causes, the abstruse and hidden cause subsequently became known to us in this case by the opening of the brain.

This clear account leaves no doubt that Caspar Bonecurtius suffered from a parasagittal meningioma. The encapsulated tumor was easily separable from the brain. The consistency, vascularity, and gross description are compatible with this diagnosis. It is of interest that mental symptoms predominated with this supra-callosal tumor. The personality changes probably are related to cingulate gyrus involvement as pointed out by Ward (9) who was aware of this case. The watery mucous or phlegm may have been a cerebrospinal fluid rhinorrhea. The history of trauma (blow or stab wound) is interesting in view of the often suggested relation of trauma to the formation of meningiomas (3). It is remarkable that Plater was able to discard poisons and humors as causes of this mental syndrome and to attribute the signs so clearly and unequivocally to the mass which compressed the brain.

ACKNOWLEDGMENT

We are indebted to Dorothy M. Schullian of the National Medical Library for aid in locating the passage and to the Reverend Thomas P. McCaffery of the Cardinal Hayes High School, New York, New York for the translation from the Latin text.

REFERENCES

1. Moodie, R. L. Studies in paleopathology XVIII. Tumors of the head among pre-Columbian Peruvians. *Ann. Med. Hist. 8,* 394-412, 1926.
2. Abbott, K. H. and Courville, C. B. Historical notes on the meningiomas. I. A study of hyperostosis in prehistoric skulls. *Bull. Los Angeles Neurol. Soc. 4,* 101-113, 1939.
3. Cushing, H. and Eisenhardt, L. *Meningiomas: their classification, regional behavior, life history and surgical end results.* Springfield, C. C. Thomas, 1938.
4. Kaufman, J. *Dissertatio de tumore capitis fungoso post caricm cranii exorto.* Helmstad, 1743.
5. Louis, A. Mémoire sur les tumeurs fongueuses de la dure-mère. *Mem. Acad. Roy. Chir. Paris, 5,* 1-59, 1774.

6. Lapresle, J., Netsky, M. G., and Zimmerman, H. M. The pathology of meningiomas. A study of 121 cases. *Am. J. Path. 28*, 757-791, 1952.

7. Plater, F. *Observationum in hominis affectibus plerisque, corpori et animo, functionum laesione, dolore, aliave molestia et vitio incommodantibus, libri tres.* Basileae, Impensis Ludovici König, 1614.

8. Cumston, C. G. A brief notice of Felix Platter, with extracts from his Ms. memoirs preserved at the library of Bâle. *Bull. Johns Hopkins Hosp. 23*, 105-113, 1912.

9. Ward, A. A., Jr. The anterior cingulate gyrus and personality. *Assoc. Res. Nerv. Ment. Dis. 27*, 438-445, 1947.

JOHN REDMAN COXE AND THE FOUNDING OF THE CHEMICAL SOCIETY OF PHILADELPHIA IN 1792.

WYNDHAM D. MILES *

The medical profession was responsible for the founding of the three earliest American chemical societies: the first, about which we know so little that we cannot give it a name, in 1789 by a group of medical students led by John Penington at the University of Pennsylvania; the second, the famous Chemical Society of Philadelphia, in 1792 by a group of students in the same institution; and the third, the energetic but short-lived Columbian Chemical Society, in 1811 by students, physicians, and chemical enthusiasts of Philadelphia. The young men who organized these societies undoubtedly received their inspiration from contemporary medical societies, and in the case of the Philadelphia and Columbian chemical societies, at least, patterned the structure and function of the organizations upon the medical societies of the town. It is not my purpose to develop the history of these chemical societies, which has been done elsewhere,[1] but to dispell some of the fog surrounding the founding of the Chemical Society of Philadelphia.

It has been known for many years, from a statement published by James Robinson in his *Philadelphia Directory* for 1802,[2] that the Society came into existence in 1792, but there has been some doubt concerning the identity of the founders. Early writers on the subject, including Henry Carrington Bolton.[3] and Marston Taylor Bogert,[4] were unable to find this information and did not stop to speculate on the subject. Edgar Fahs Smith, writing in 1914 and 1919, stated that James Woodhouse, the Professor of Chemistry in the Medical School of the University from 1705 to

* Historical Office, Army Chemical Corps, Army Chemical Center, Md.

[1] For the 1789 society see: Wyndham D. Miles, "Early American Chemical Societies. 1. The 1789 Chemical Society of Philadelphia. 2. The Chemical Society of Philadelphia," *Chymia* 3, 95-113 (1950). For the Chemical Society of Philadelphia see: Miles, *op. cit.*; Edgar Fahs Smith, *Chemistry in America, Chapters from the History of the Science in the United States* (New York, 1914), 12-75. For the Columbian Chemical Society see: Smith, *op. cit.*, 208-218; Marston Taylor Bogert, "American Chemical Societies," *Journal of the American Chemical Society*, 30, 163-182 (1908); Henry Carrington Bolton, "Early American Chemical Societies," *Popular Science Monthly*, 51, 819-826 (1897), and *Journal of the American Chemical Society*, 19, 717-732 (1897).

[2] James Robinson, *The Philadelphia Directory, City and County Register, for 1802* (Philadelphia, 1802), page xxv of appendix.

[3] See reference 1.

[4] See reference 1.

1809, was the leader.[5] But Smith, characteristically, did not give the source of his information and we cannot ascertain where he obtained his, as we now know, erroneous data. Later writers, having no reason to suspect Smith's usually reliable statements, followed his lead, with the result that the error is now disseminated through the literature.[6] Actually, as will be shown, James Woodhouse did not found the Society, and he was not even an early member; the organizers were a group of medical students at the University, including, and perhaps led by, John Redman Coxe.

Our story begins in 1809, when the death of James Woodhouse left vacant the professorship of chemistry in the Medical School in Philadelphia. The post was lucrative owing to student fees, and honorable because of the reputation of the school and the prestige of the physicians on the faculty. Several men scrambled for the position, among them Coxe, Robert Hare, Adam Seybert and Patrick Kerr Rogers. The candidates pressed the scientific leaders of the town for recommendations and in every way tried to marshall votes on the Board of Trustees. On June 15, 1809, Coxe wrote a letter recounting his qualifications to Joseph B. McKean of the trustees, and McKean dutifully placed the letter before the Board, whence it passed eventually into the archives.[7] The letter reads as follows:

My dear Sir:

Having been applied to by one of the Candidates for the Chemical Chair, personally, to know if I should object to his obtaining from a *friend of mine* (actively aiding me on this occasion) a written estimation of his abilities; although I felt myself very delicately situated, I could only say I had none; for I have uniformly endeavoured to avoid any measure, by which the merits of my opponents might be rendered doubtful. The above circumstances, I trust, will plead by excuse for troubling you at present, with the grounds on which I have founded my application for the professorship of chemistry.

As a branch of Medical Education, I need not inform you, I would not have attained a Medical degree, without that previous information in Chemistry, which enabled me to satisfy both the Medical faculty, & the Board of Trustees in my various private and public examinations; the same Diploma, which by the signatures of the Faculty attests my qualifications, confers on me by the authority of your Board, all the priveliges, etc., appertaining to the rank of a Doctor in Medicine:

---

[5] *Chemistry in America*, 12; *Chemistry in Old Philadelphia* (Philadelphia, 1919), 22; *James Woodhouse, a Pioneer in Chemistry, 1770-1809* (Philadelphia, 1919), 39.

[6] A few examples will suffice. Charles Albert Browne and Mary Elvira Weeks, *A History of the American Chemical Society* (Washington, 1952), 7; James Kendall, "The First Chemical Society, the First Chemical Journal, and the Chemical Revolution," *Proceedings of the Royal Society of Edinburgh*, 63, 346 (1952); Eva V. Armstrong and Claude K. Deischer, "Dr. Henry Moyes, Scotch Chemist, his visit to America, 1785-1786," *Journal of Chemical Education* 24, 172 (1947).

[7] The letter may be found in volume 6, page 31, of the University Papers.

in which of course is included, the power of teaching others, the various branches of Medical Science.

After receiving my degree in this University, I attended several courses of lectures in Chemistry, both in London & Edinburgh under the first teachers in that science; and in Paris, by the friendship of the late Dr. Edwards, I possessed the advantage of an acquaintance with several of the most eminent Characters in Chemical knowledge.

So far back, as the year 1792, I was one of the first, who assisted in the establishment of the Chemical Society of this City; at which period, I was considered as sufficiently advanced in a knowledge of Chemistry, to be elected by my fellow students, one of the four Lecturers on that Science, in that Instituion. This was a long time previous to the admission of the late Professor of Chemistry into that Society as a member; & by the inclosed Diploma, you will perceive that I held the rank of one of the Presidents of the Society; and was also raised to the situation of an Honorary Member.

The pursuits I have lately engaged in, have led me naturally to Chemistry; as I have likewise the various publications in which I have engaged. The American Dispensatory, the first one, expressly compiled in this country (which has superseded the further importation from Europe of works of this description, & which has been very favorably received there & of which a 2d. Edition is now demanded) certainly implies in its execution, a competent acquaintance with Chemical Science.

I may state also, that several years ago, I contemplated engaging in a course of Lectures on this subject; and with this view, I had commenced a series of lectures, which were put a stop to, by the interference of other avocations, but which, although suspended, have never been entirely laid aside.

The few Documents I transmit on this subject of my qualifications, by those competent to judge of them, might have been readily extended; but believing that these might be sufficient for the information of the Board, I have avoided troubling other members further on this occasion; as I am satisfied their own inquiries will not be omitted, to qualify them to form a judgment as to my pretensions.

I remain Dear Sir
with great respect
yr. obedt. Servant
John Redman Coxe.

This letter shows clearly that Woodhouse was not the founder of the Chemical Society, and was not among the early members. Most probably he entered the Society in 1796 when he became Professor of Chemistry in the Medical School of the University.

A few other points brought up by this letter merit discussion. Coxe mentions a diploma which was presented to him by the Society in appreciation of his service as President. The existence of these diplomas has not been known to historians of American chemistry. Coxe's diploma is not in the archives, probably having been returned to him by the Board of

Trustees. The discovery of this document, in a manuscript collection or in a historical society, would be an interesting, if minor, event in chemical history, but so far it has eluded pursuit.

Furthermore, the fact that Coxe was a president of the organization has not been known until now. A notice of the Society published in the *Philadelphia Aurora* on January 14, 1801, lists him as one of the two vice presidents and one of the twelve lecturers, but makes no mention of his having held a higher office.

The opposing candidate, whose action led Coxe to write this letter, was probably Robert Hare, Coxe's most worthy rival; and Coxe's friend was probably John Syng Dorsey. The evidence for this is the existence in the Archives of the University of two letters from Dorsey to the trustees, one commending Hare as a chemist and the other being equally flattering to Coxe. It would appear that both Coxe and Hare requested Dorsey's support, and the latter escaped from the dilemma by recommending both.

Coxe's proud recitation of his medical education in paragraph two was an oblique way of forcing the Board of Trustees to contrast his background with that of Hare, who was not an M. D. This was an important point because the medical faculty and the physicians of the town felt that no one but a physician should be on the staff. In the end it was Hare's lack of a medical education which swung sufficient votes away from him to allow Coxe to win the election.

Ironically, Coxe proved to be a failure as a teacher of chemistry while Hare went on to become the greatest American chemist and teacher of his time. Coxe was conservative in his scientific views and clumsy as a demonstrator. In 1818 he took the opportunity to escape from a position which had become distasteful to him by applying for and receiving the Chair of Materia Medica. But here he also proved to be a failure, and he was finally discharged, amidst much sound and fury, in 1835 by the Board of Trustees.[8] Hare, after losing the election, concentrated for a time on the brewing business established by his father. Later he became Professor of Natural Philosophy at the College of William and Mary, and finally returned to Pennsylvania as successor to Coxe in 1818. He occupied the Chair of Chemistry until 1847, when he retired and surrendered the leadership of the profession to chemists of a younger generation.

[8] For Coxe's defense against his dismissal see: John Redman Coxe, *An Appeal to the Public, and Especially to the Medical Public, from the Proceedings of the Trustees of the University of Pennsylvania, vacating the Chair of Materia Medica and Pharmacy* (Philadelphia, 1835).

MEDICO-HISTORICAL NEWS AND ACTIVITIES

CORRESPONDENCE AND REPORTS

JOSEPH HERSEY PRATT, M. D., Sc. D.

1872-1956

The death of Dr. Joseph H. Pratt on March 3, 1956, at the age of eighty-three, brought to a close the life of one who practiced medicine in the scientific and humanistic tradition of the 'Big Four' of Johns Hopkins University. He was born December 5, 1872, in Middleboro, Massachusetts. During his undergraduate work at Yale University, he came under the influence of Chittenden, the first to establish in America a laboratory for physiological chemistry. In 1898, he obtained his M. D. degree from Johns Hopkins University, School of Medicine. After completing Dr. Welch's course in pathology at Hopkins, he pursued similar studies at the Boston City Hospital in contact with Dr. Frank B. Mallory. He taught pathology for four years at the Harvard Medical School under William T. Councilman to whom he later referred as his father in medicine. In 1902, he began the private practice of internal medicine in Boston and always managed to combine this private practice with laboratory investigation into diseases of the blood and pancreas, pneumonia, psychalgias, and tuberculosis. In 1906, Dr. Pratt offered for the first time, a course in clinical research as an elective for fourth-year students; one of his students was Francis G. Peabody who later became a distinguished Professor of Medicine at Harvard Medical School. This course was significant because a great barrier of prejudice and misunderstanding existed at this time between the scientist and the clinician. Dr. Pratt tried at every turn to unite the old humanities and the new sciences. He liked to refer to the remark of his old teacher, Professor Ludolph Krehl that, "while the medicine of the recent past rests on natural science as its sole foundation, that of the future will undoubtedly be built partly on natural science (Naturwissenschaft) and partly on psychology and ethics (Geisteswissenschaft)." It was Professor Krehl who impressed upon Dr. Pratt the importance of personality in the study of the sick man. I have often heard Dr. Pratt remark that "in the sick-room what you are may speak so loud that the patient cannot hear what you say." This was one way of focusing the attention of students to the idea that true success as a physician is largely dependent on personality and character. Dr. Pratt was responsible for the re-introduction of pneumothorax as a therapeutic procedure in this country; was the first to emphasize the great importance of prolonged bed rest without exercise in the treatment of pulmonary tuberculosis; and was the originator of group psychotherapy, a unique class method for the treatment of psychoneurosis.

Dr. Pratt held the position of Physician-in-Chief at the Boston Dispensary from 1927-31; at the New England Center Hospital from 1931-38; and at the Joseph H. Pratt Diagnostic Hospital from 1938-56. He was a Trustee of the Bingham Associates Fund for the Advancement of Rural Medicine. Dr. Pratt

received an Honorary Doctor of Science Degree from Colby College in 1941 and was similarly honored by Tufts College in 1944. In 1947, he was made Emeritus Professor of Medicine.

As a distinguished scientist, Dr. Pratt always held fast to the spiritual values of life. One reads in Micah 6:8 "He hath showed thee, O man, what is good; and what doth Jehovah require of thee, but to do justly, and to love kindness, and to walk humbly with thy God." This passage from Scripture typifies the life's work of Dr. Pratt. He cared for and cured his patients with kindness and justice; his intellectual approach was always transparently honest; he was deeply grounded in high moral principle; he had the humility of the Good Samaritan and daily took a trembling walk with God. Surely when one speaks of Dr .Pratt now or in the future, there will come to mind two signally important facts: *a Good Life and a Great Institution.* He lived through an era when the five senses were the primary tools of the physician's art and yet succeeded—while always using these aids in diagnosis—in making his philosophy and practice of medicine an ever expansive one through good teaching and productive research. Coupled with his deep personal interest in patients, Dr. Pratt was also impelled by a strong social sense which manifested itself in such enduring contributions to medical practice as the class method teaching and the rural medical program which are now integral parts of the program of teaching and research at the New England Center Hospital.

The Pratt Diagnostic building has inscribed on its left wing the illustrious names of Drs. Warren, Jackson, and Smith and on its right wing the names of Drs. Bartlett, Bowditch, and Fitz. These physicians represent the intellectual milieu in which Dr. Pratt gained his insight in the fields of surgery, physiology, pathology, medical education, and clinical teaching. Over the entrance to the Hospital, the name of Dr. Pratt is permanently inscribed in such a manner as to suggest that it was these two streams of earlier Bostonian tradition and New England medicine which enabled him to carry the Torch of Learning to future generations. He will forever remain a pivotal figure in the growth and development of the New England Medical Center and the Tufts University School of Medicine.

Dr. Pratt is a striking example of a physician who met his obligations in the exemplary manner of a Linacre (Litterae); a Harvey (Scientia); a Sydenham (Praxis) and a Welch (Doctrina). In his name, it may truly be said that the spirit of man is indeed the candle of the Lord.

BENJAMIN SPECTOR

MUSEUM OF HISTORY AND TECHNOLOGY

The Congress of the United States has recently authorized the construction on the Mall in Washington of a museum to be called the "Museum of History and Technology." The bill providing the funds for its construction was signed into law by President Eisenhower on June 13.

The Museum of History and Technology, to be completed about 1960, will exhibit materials now housed in the "Arts and Industries Building" of the Smithsonian Institution. Among the many subjects included in the new museum will be Halls of Medical History, Dental History, and Pharmaceutical History.

Our preliminary plans for the Hall of Medical History include exhibits on the following subjects:

A. Cardiology (including bloodletting, electrocardiograph, stethoscope, sphygmomanometer, mechanical heart, etc.).

B. Surgery (including evolution of surgical instruments as scalpel, amputation knife, saw, trepan, artery and dressing forceps, bullet-extractors, tourniquets, etc., and a complete surgical operating room of the 1800's).

C. Anesthesiology.

D. Ophthalmology (including spectacles).

E. Neurology (including electroencephalogram).

F. Pediatrics (including infant nursing bottles).

G. Roentgenology.

H. Memorabilia of the pioneers of American medicine.

I wish to solicit the assistance of the readers of the *Bulletin of the History of Medicine* in finalizing plans for the Hall of Medical History of the new Museum of History and Technology. While suggestions and assistance in planning the actual exhibits will be helpful, we are particularly anxious to receive offers of donation of original significant equipment for possible inclusion in the historical exhibits. For example, we are looking for information as to possible sources of fixtures for the pre-1900 surgical operating room.

GEORGE GRIFFENHAGEN
Curator
Division of Medicine and Public Health

REPORT ON THE ACTIVITIES OF THE ALABAMA SOCIETY OF MEDICAL HISTORY

The Alabama Society of Medical History was organized on August 1, 1946, and a summary of the highlights of the activities during the first ten years is included in this report.

The general aims of the society as laid down at the first meeting are as follows: the study of Alabama history; the sponsoring of lectures on medical history by distinguished individuals; the teaching of medical history; obtaining historical items for the Medical College of Alabama.

The officers elected at the first meeting were: Dr. W. G. Harrison, Honorary President; Dr. Seale Harris, President; Dr. M. Y. Dabney, Vice President; Dr. Emmett B. Carmichael, Secretary.

Thirty-seven lectures have been sponsored and the essayists included several distinguished people from out of state: Dr. B. Bernard Weinstein, Dr. Richard H. Shryock, Dr. Frank K. Boland, Dr. Irvine W. Grote, Dr. Lawrence Reynolds, Mrs. Margaret B. Cate, Dr. William L. Straus, Jr., and Dr. William Boyd.

Not only has the society stimulated a stress in the emphasis of medical history

in regular courses but it has also aided us in obtaining for our library many historical items which encompass the fields of medicine, dentistry, pharmacy and nursing.

EMMETT B. CARMICHAEL
Professor of Biochemistry,
Alabama Medical Center

TRANSLATION OF LATIN MATERIAL

The following letter of October 3, 1956, addressed to the editor of the Bulletin is here published with a brief editorial comment.

It may well be doubted if there be one member of the American Association of the History of Medicine who can read Latin with facility. For this reason, I request that writings in Latin included in subsequent editions of the Bulletin be accompanied by an English translation as made by some competent Latin scholar.

JAMES M. NORTHINGTON, M. D.

Editor's Note: Although we know of a number of members of the Association who can read Latin with facility, we sympathize with the request of our correspondent. Whenever possible authors should include English translations of important passages, so that all readers can follow the argument. There remains, however, the fact that the Bulletin also publishes documents whose value consists in making material available for research. In such cases it does not always seem necessary or even advisable to use the limited space at our disposal for an English translation.

ANNOUNCEMENTS

AMERICAN ASSOCIATION OF THE HISTORY OF MEDICINE

Thirtieth Annual Meeting, May 6-8, 1957

The Thirtieth Annual Meeting of the Association will be held at Richmond and Williamsburg, Virginia, May 6-8, 1957, in connection with the celebration of the 350th anniversary of the founding of Jamestown. The central feature of the meeting will be a Symposium on Colonial Medicine sponsored jointly by the Medical College of Virginia Foundation and the Association. Those who wish to present papers at any of the general sessions are requested to communicate at an early date with the Chairman of the Program Committee, Dr. Genevieve Miller, Cleveland Medical Library Association, 11,000 Euclid Avenue, Cleveland 6, Ohio.

The William Osler Essay

In order to stimulate interest and research in medical history among students of the Medical Schools of the United States and Canada, the American Association of the History of Medicine has established a Medal that will be granted annually to the author of the best student essay submitted to the Association.

The Medal has been named in honor of William Osler, who more than any other academic teacher succeeded in creating among students enthusiasm for the history of medicine.

The Association will consider unpublished essays by men and women who were students in Schools of Medicine and had not yet obtained their doctor's degree at the time the essay was written. To be considered, an essay must be submitted before or within one year after the author's graduation.

Essays that are the result of original research will be given preference, but the Association will also consider essays which, without being the result of original research, show an unusual appreciation and understanding of historical problems.

Essays should not exceed 10,000 words in length.

Essays must be sent before March 1, 1957, to

Dorothy M. Schullian, Ph. D., *Chairman*
National Library of Medicine
History of Medicine Division
11,000 Euclid Ave.
Cleveland 6, Ohio

First Pan-American Congress of the History of Medicine

The Brazilian Institute of the History of Medicine has announced that the First Pan-American Congress of the History of Medicine will meet at Rio de Janeiro, April 14-21, 1957, coincident with the celebration of Pan-American Week, under the official patronage of the government of Brazil and the Honorary Presidency of Dr. Juscelino Kubitschek de Oliveira, President of the Republic.

Through its President, Dr. Ivolino de Vasconcellos, the Institute has most graciously invited the members of the American Association of the History of Medicine to participate. The official theme of the Congress will be Pre-Columbian Medicine, but papers will also be received on the general history of medicine and allied sciences, and on medical philosophy, ethics, literature, and folklore. Papers should be up to 30 double-spaced typewritten pages. Three copies should be sent by February 28 to the Secretary-General of the Congress, Dr. Ordival Cassiano Gomes, at Rua México, 164–2.° Andar, Rio de Janeiro, Brasil. Those who wish to register for the Congress are requested to forward to the Secretary-General a *curriculum vitae* and three photographs, together with the registration fee of 500 cruzeiros payable to Dr. Paulo R. Bandeira, Treasurer of the Congress, through the Secretary of the American Association of the History of Medicine, Dr. John B. Blake, The Rockefeller Institute, 66th Street and York Avenue, New York 21, N. Y.

It is hoped that a large delegation of the members of the Association will attend, and they are assured of a most cordial welcome.

NATIONAL NEWS

Armed Forces Institute of Pathology

A rare portrait of William H. Welch, M. D., famed pathologist of the Johns Hopkins University and Medical School has been presented to the Armed Forces Institute of Pathology by Dr. Benjamin Rones, a Washington ophthalmologist. The picture is a large drypoint etching by Alfred Hutty made especially for the celebration of the eightieth birthday of Dr. Welch on April 8, 1930. This impression is number ten of an edition of about fifty. The eightieth birthday of Professor Welch was celebrated simultaneously by his students and friends in many lands around the globe. Nowhere were the ceremonies more impressive than in Washington, D. C., where a brilliant audience of 1600 persons gathered to hear Dr. Welch characterized by President Herbert Hoover as "our greatest statesman in the field of public health."

Kentucky

The University of Louisville School of Medicine announces the appointment of Dr. D. P. Hall as Professor of the History of Medicine and Chief of the Section on the History of Medicine at the University of Louisville School of Medicine. The above appointment is in addition to Dr. Hall's duties as Associate Professor of Surgery in the University.

National Library of Medicine

By action of the Congress and the President of the United States, Public Law 941 was enacted on August 3, 1956, establishing in the Public Health Service a National Library of Medicine. The Armed Forces Medical Library *News* of September 1956 publishes the text of this new law.

PROGRAMS OF MEETINGS

American Academy of the History of Dentistry

Fifth annual meeting, September 28, 1956, Atlantic City, N. J.: President's Address, John E. Gurley; "Some Early History of the Pennsylvania Association of Dental Surgeons," Harold L. Faggart; "Progress Report on the Centennial History of Dentistry," Robert W. McCluggage; "The Early History of Dental Amalgam," George Dickson; "Shakespeare and Dentistry," Gardner P. H. Foley; "The Use of Porcelain in Dentistry from Pierre Fauchard (1728) to Charles H. Land (1847-1922)." Curt Proskauer; "The Life of Charles Henry Land (1847-1922)," L. Laszlo Schwartz.

Beaumont Medical Club

April 27, 1956: "Medical Progress in Northern Newfoundland and Labrador. The Grenfell Mission Today," John P. Riesman; "Changing Concepts," Robert H. Parry. Officers elected: President, Bert G. Anderson; Vice President, T. R. Forbes; Secretary-Treasurer, L. L. Waters.

May 19, 1956: "The Effectiveness of Medicine in Connecticut," Frederick G. Kilgour.

College of Physicians of Philadelphia

October 9, 1956: Symposium on "Faith and Healing: Origins of Psychosomatic Medicine": Speakers: Nicholas Padis, Kenneth E. Appel, Edward Weiss, Ernest Gordon. Presiding: Lewis C. Scheffey.

Society of Medical History of Chicago

October 17, 1956: "The Story of Three Women," Francis J. Gerty; "The History of Lithotomy," Joseph H. Kiefer.

BOOK REVIEWS

KENNETH J. FRANKLIN. *A Short History of Physiology.* Second edition. London-New York: Staples Press, 1949. 147 pp. Ill. $2.00.

KARL E. ROTHSCHUH. *Entwicklungsgeschichte physiologischer Probleme in Tabellenform.* München-Berlin: Urban & Schwarzenberg, 1952. viii + 122 pp.

K. E. ROTHSCHUH. *Geschichte der Physiologie.* Berlin, Göttingen, Heidelberg: Springer-Verlag, 1953. xi + 249 pp. Ill. D. M. 29.60.

The historiography of a science like physiology shows the importance of the point of view selected by the author. The professional physiologist usually wants to know the series of steps that led to the current opinions and established facts. History thus becomes a chronology of discoveries and inventions together with a description of the techniques used. In addition, some steps in the wrong direction are mentioned which are to explain the retardation of correct solutions. Professor Franklin's book represents this approach. In his prologue he says: "The present volume will deal with the history of *animal* physiology; it will show first the evolution of the experimental method, and then the results which have in more recent times attended its use." The evolution of the experimental method is traced in chapters 1-8, beginning with Alcmaeon and culminating in Harvey. Then a chapter each is devoted to the 17th, 18th, and 19th centuries, showing the progress in the various fields made till about 1900. A very short epilogue, describing Claude Bernard's concept of internal environment, and an index of personal names close the little book which is illustrated with 16 portraits of eminent physiologists and the picture of a membership card of the first congress of physiologists (1889).

Such a treatment of the material almost suggests adoption of the straight tabular form dispensing altogether with a connecting text. Professor Rothschuh in his "History of the Development of Physiological Problems in Tabular Form" has chosen this approach in partial solution of his aim at presenting the history of physiology. The tables are arranged according to the treatment of the subject in textbooks of physiology. In 18 main sections (with many sub-divisions) the author presents "blood," "respiration," etc. down to the special senses. Preceded by running numbers (which are used in the index of names at the end of the book), the entries carry the year, names, short description and place of publication of the discovery and discoverer respectively. The period covered extends from the sixteenth century till about 1920. The usefulness of these tables hardly needs any commentary. Whoever works in the field will easily find the data he is looking for. Moreover, the bibliographical references carry symbols indicating whether the author himself has been able to verify them or, where this was impossible, what degree of reliability might be placed on them.

In publishing the "Tables" separately, Professor Rothschuh intended to free the path for a book treating the history of physiology from the point of view of medical history, history of culture, and biography. This text is represented by his "History of Physiology," divided into the following main sections: I. Physiology

of antiquity, II. Physiology of the middle ages, III. Elaboration of the fundaments and progress of physiology in the sixteenth and seventeenth centuries, IV. physiology of the time of enlightenment, V. Physiology in the nineteenth century, VI. Retrospect, prospect, and conclusion.

In the first half of the book (sections 1-4 and the beginning of section 5) the attempt is made to sketch the development of physiology against the cultural background of the periods in question. In the second half the treatment is almost entirely biographical in the sense that the heads of various schools are discussed together with their pupils. Since many physiologists belonged to different schools which, moreover, often worked on the same themes, it is important for the reader to consult the "Tables" in order to coordinate personalities and developments within the subject. Otherwise, this part is both interesting and stimulating, especially, in my opinion, the comparative evaluation of Johannes Müller and Carl Ludwig (p. 122 f.) and the characterization of Hering (p. 188 ff.). The author explains the relative length devoted to German physiology since 1800 by the great role it played and the difficulties of obtaining foreign literature in post-war Germany.

Considering the vast amount of material involved, the work can be said to be fairly accurate in details.[1] A good bibliography and indexes of names and subjects are added to the book whose value is greatly enhanced by the large number of illustrations, especially of portraits, many of which the author received from private owners.

For the physiologist, as mentioned at the beginning, a history of his science in terms of progressing knowledge is likely to have an immediate appeal. The same is true of the biographical approach which tells something about the connection of scientific research and the men behind it. This approach instructs how one should (or should not) behave to be a good physiologist. It is different regarding the correlation of physiology with the culture and life of a period. Insights of this kind seem remote from the work of the laboratory. The historian may derive great satisfaction from perceiving a relationship between Harvey's work on the circulation of the blood and the art of the period.[2] The physiologist, *qua* active scientist, is likely to feel that such cultural factors not of his making and beyond his control are of little concern to him. Dr. Franklin has kept their consideration at a minimum, and Dr. Rothschuh has not been altogether successful in their handling. The respective sections of his book often give the impression of reminders of what had once been learned in school; the thread with the physiological part proper remains very thin. With an author like Dr. Rothschuh who has published so many

[1] I list a few errors (apart from possible misprints) that should have been avoided. Page 3: Haller's *Primae lineae physiologiae* appeared in 1747; the date, 1751, given by Rothschuh is that of the second edition. Page 13: Galen had no first name Claudius. Page 43: the characterization of the sect of the Ismailiya is misleading. Page 165: Claude Bernard did not coin the term "milieu intérieur" in his last work; it is to be found at least as early as the *Introduction à l'étude de la médecine experimentale*, Paris 1865, p. 108. Page 207: The Johns Hopkins University should not consistently be referred to as "John-Hopkins-Universität."

[2] Henry E. Sigerist, William Harveys Stellung in der europäischen Geistesgeschichte, *Archiv für Kulturgeschichte*, 1928, *19*: 158-168.

articles on fundamental questions,[3] one can be sure that this is not due to personal shortcomings. Rather, I believe, responsibility largely rests with the wide gap still existing between natural science on the one hand, and humanities and social sciences on the other. The interests of the "historian" and those of the "natural scientist" are so far apart that we all have difficulties in bridging them in works on the history of a science. To my mind, a successful and organic interconnection between scientific evaluation, biographical characterization, and cultural and social insight can be expected from a strengthening of those disciplines only which stress such a synthesis. The works under review, excellent as all three are in their different ways, suggest the desirability of reaffirming the independence of the history of medicine, science, and technology as neither a subdivision of general history nor a handmaiden of other medical, scientific, and technological disciplines. The history of medicine, science, and technology should escape the danger of stratification into historical periods and isolation from clinicians, scientists, and engineers. On the other hand, it should not be made subservient to the latter groups and thereby impeded in its free development. In short, it should be allowed to work out its own proper way stimulated by such problems as are raised by the very welcome three books under review.[4]

OWSEI TEMKIN

WALTHER FORSTER. *Beethovens Krankheiten und ihre Beurteilung.* Wiesbaden: Breitkopf & Härtel, 1955. 68 pp.

Walther Forster's "Beethoven's Diseases and Their Assessment" is a fascinating booklet recently printed in Wiesbaden, Germany, by Ludwig von Beethoven's own publisher, Breitkopf & Härtel. It has not been translated into English as yet but one hopes that it soon will be. Its 63 pages are a veritable treasure of information.

The composer must have been a fairly tough youth, requiring sixty coffee beans to be ground up to make one cup of the coffee he drank from morning till midnight, eating literally pecks of his favorite dish, macaroni and cheese, nor scrupling to have a convivial glass with a friend. When he took a bath he splashed water around the room like a hippopotamus, poured whole pitchers of it over his head when composing, and is said to have been thirstier than a camel. He could compose far

[3] For instance: Theoretische Medizin? Begründung ihrer Notwendigkeit in der Gegenwart und eine Umreissung des Gebietes, *Klinische Wochenschrift*, 1935, *14*: 1401-1405; Wissenschaftstheoretische Bemerkungen zur Physiologie und zur Geschichte der Physiologie, *Sudhoffs Archiv*, 1953, *37*: 361-369; Über Stilformen und Stilwandlungen im ärztlichen Denken, *Studium Generale*, 1954, *7*: 619-627.

[4] For discussion of these problems see: Richard H. Shryock, The Interplay of Social and Internal Factors in the History of Modern Medicine, *The Scientific Monthly*, 1953, *76*: 221-230; the articles printed in Conference on the History, Philosophy, and Sociology of Science, *Proceedings of the American Philosophical Society*, 1955, *99*: 325-354; and Herbert Dingle, History of Science and the Sociology of Science, *The Scientific Monthly*, 1956, *82*: 107-111.—In speaking of "the history" of medicine, science, and technology I use the singular for convenience's sake, without any implication as to the interrelationship of historical studies of these three disciplines.

into the night in those days without exhaustion, walk miles without tiring, and did not work an effete forty-hour week at his musician's job.

He was born in 1770. As the century neared its end, the halcyon days when he was "entire and balanced . . . and could lift stones . . ." also ended, and his long ordeal began, probably during the months of May to October in 1797. He was seized at this time by an illness, probably typhoid fever, from the effects of which he never recovered and whose sequelae finally killed him.

Most people imagine that Beethoven's chief trouble was his deafness. Very few know how many ailments he had besides this and how persistently he suffered the torments of the damned almost all his adult life from other causes. Forster tells all this and more in a fine research job, mostly using the contemporary accounts of physicians who attended Beethoven, or quoting from personal notes of interested parties who stood close to the master.

The first mention we have of his deafness was made on June 1, 1801, when he was thirty-one years old. On that date he wrote to an intimate, "My hearing . . . is diminished." At about the same time he began to suffer from the chronic diarrhea which probably contributed not a little to his retiring from active social intercourse. His deafness, which started in his left ear, was kept a secret as long as possible, for fear his compositions would be made fun of, and with the help of sympathetic friends he did manage to conceal it an astonishing length of time. When Napoleon's armies marched into Vienna in 1814, Beethoven went into a deep dark cellar and stayed there with pillows over his head, not from cowardice, as all who knew him would testify, but because the noise of gunfire was too painful to endure. But before this, he had tried everything in the hopes of discovering some cure, taking three or four times the amount of medicines, teas, powders, and volatile ointments prescribed, on the theory that "if a little is good, more's better," going to one after another and consulting in all some seventeen physicians. Four different hearing trumpets were devised for him by the inventor of the metronome, Johan Nepomuk Maelzel, but none proved satisfactory.

He frequently complained of "cold in his intestines" and often lay in bed. In the winter of 1822 he left Vienna for a change of climate, feeling the cold would "murder" him, and moved to Baden: precisely ten miles away.

At the age of forty-four, thirteen years before his death, he retired as a performer with the playing of the piano part in his trio, Opus 97. He regretted always that people were poor and could not afford to hear great music performed. If proverty were "abolished, what a world it would be," he often said. Life would certainly have been easier for him in many ways. Forster tells us that the time finally came when he went full circle and began to go back to those doctors who had first treated him and been dismissed as unsatisfactory. All doctors, however, even those he trusted and of whom he was fond, he called "living Hottentots."

For the last thirteen years of his life he could not hear a word anyone said to him, and for this reason we are the richer in knowledge of his life and times. One hundred and thirty-eight "conversation note books" were kept during these years and have come down to us. He used verbal speech but all who addressed him had to write down what they wanted to say, their words then being scanned by those anxious myopic eyes so often described by those who knew him as "radiant" and "beautiful."

His last illness was a perfect martyrdom. It took him six months to die. Jaundiced and emaciated, he lay in a bed full of bedbugs, almost unable to eat, sleepless, distraught, and tormented by head noises. He was also worried about money (he had not enough to buy medicines and pay his doctors) and was greatly troubled by "what people would say." That they might think he was a drinker because he had dropsy, which was currently believed to be caused by the consumption of alcohol, preyed on his mind, for he had shunned and taken pride in shunning this and other excess all his life. But he kept up his hopes to almost the very end and was still composing a month before he died.

With the passing days he grew smaller as his abdomen grew bigger. Finally it was punctured by Surgeon Johann Seibert who wrote to the patient at the end of the operation, "You have behaved like a knight." Twenty-five pints of fluids were withdrawn. A wound infection set in. Three more times by similar punctures his attendants tried to give him some relief, to no avail. The last time so much fluid seeped out in the night hours following the operation that the bed was soaked through and the room literally flooded.

Some Rhine wine for which the sick man had expressed a longing arrived two days before he breathed his last, but by this time, as he said with a tear rolling out of the corner of his eye, it was too late. Never more would he enjoy this or any of life's pleasures.

In reading about the post-mortem performed on the fifty-six year old genius, March 27, 1827, one is reminded of the prostrate Gulliver swarmed over by the marvelling Lilliputians. The unusual description of the visible parts of the ears alone indicates with what reverence and curiosity every part was inspected. Due, however, to the fact that the examiners had no way to fix the tissues and did not know their normal structures, the secret they were really after, what made the man Beethoven, eluded them; he escaped them like quicksilver.

He was exhumed twice. The first time was in 1863, four physicians, one pathologist, and one dentist doing the autopsy. The dentist was incredulous. Beethoven's teeth were in a state of near perfection; one lower wisdom tooth, probably in his young days, had been filled with gold. At this time his remains stayed unburied nine days, during which time the famous skull, remarkable for its thickness, "visited" at the home of his beloved friend von Breuning, where it was treated as an honored guest, sharing its host's bedroom at night. In 1888, because the body had to be moved to the resting place it now occupies in the Heroes' section of the Central Cemetery in Vienna, it was again studied, but this time for only a precious twenty minutes, when a death mask was taken.

Not confirmed and unconfirmable, six afflictions have been singled out as the possible cause of the master's half a lifetime of suffering and, at last, his death. They are: syphilis, acquired or inherited, tuberculosis, typhoid fever, otosclerosis, toxic neuritis of both acoustic nerves and cirrhosis of the liver. Seventy-seven physicians and historians of eight nationalities have written eighty-eight lengthy and learned essays about which disease or diseases he actually had. He himself innocently thought that if only he could have got a really good cook much of his burden would have been lightened, and he once said wistfully: "Only the pure in heart can make a good soup."

E. V. Ullman

DIETER KLEBE and HANS SCHADEWALDT. *Gefässe zur Kinderernährung im Wandel der Zeit.* Frankfurt am Main: Schirmer & Mahlau Verlag, 1955. 53 pp. Ill.

This small monograph, through numerous well selected and reproduced illustrations and a moderate but adequate amount of text, traces the evolution of infant feeding utensils through the ages, from B. C. 2500 to the present. The book is a "must" for every collector or curator of antique infant feeders. From it even the veteran collector will discover new worlds to conquer. The volume should be included in every medical-historical and paediatric department library. It should be well received as a small "thank you" gift by any paediatrician, even though he be not conversant with the German language.

Ancient Egyptian, Greek and Roman, also mediaeval infant feeders, now so difficult for the private collector to obtain, are most adequately depicted from actual specimens, sculptures and paintings preserved in diverse public collections. Proof, particularly their discovery in infant burials and the presence of casein in some examples, is given that the short spouted Greek and Roman specimens were feeders rather than oil containers for filling lamps. From the section beginning on page 47 it might appear that the thick cereal feedings, pap and panada, were fed only in later infancy with the introduction into the diet of solid food. Actually, in both Great Britain and Continental Europe during the 18th Century, pap, usually prepared without milk, was employed very frequently even from birth as the sole feeding. Many parents and physicians feared that animal milk would produce the "atery gripes and that through the ingestion of milk, whether human, even maternal, or animal, the infant would acquire the evil passions and longings of the supplier.

Silver pap boats were used in Great Britain from the early 18th to the mid 19th Century and are the most frequently encountered antique infant feeders. Typical examples bear a short spout similar to that of the pottery boat, illustration 56, rather than the long narrow spout of the German silver specimen, illustration 57.

Had space permitted, an illustration of the English pap warmer of the 18th and 19th Centuries might well have been included. This consisted of a base, enclosing a small alcohol burner, supporting a food container the cover of which usually was surmounted by a candle socket. These were produced in the type of pottery, occasionally porcelain, from delft to transfer printed wares, in domestic usage at the time. Somewhat similar pap warmers in painted tin plate were produced in America in the late 19th and early 20th Centuries.

Points to be corrected are the following: On page 27, the legends have been transposed, the two lower illustrations refer to the tin plate "Pennsylvania Dutch" nursing cans from the Wykoff collection in the Dittrick medical museum, Cleveland. The pap boat in illustration 56 is pottery, not porcelain, and the mark is simply "Davenport," (which Staffordshire pottery was located at Longport). Reference 18 should read "1841 to 1946."

The bibliography is most comprehensive.

In brief, this monograph is one which your reviewer, whose avocation over a period of 35 years has been the collection of antique infant feeding apparatus, would have been most proud to have written.

T. G. H. DRAKE

LUCY WILDER. *The Mayo Clinic.* Second edition. Springfield, Ill.: Charles C Thomas, 1955. viii + 69 pp. Ill. $3.75.

In this volume the author gives a factual account of the development of the Mayo Clinic. Three divisions, the Past, the Future, and the Present, make up the book.

The Past is handled very well. This chapter contains a brief but concise history of the beginning of the clinic and also illustrates how the town of Rochester, Minnesota, has benefited from it. Since the chapter is short and presents just facts, detail, of necessity, is lacking. The various personalities that made up the nucleus are mentioned.

The Future is actually a continuation of the Past as it is concerned with the origin of the various departments. The close relationship (leading to the final merger) of the Mayo Clinic with the post-graduate division of the University of Minnesota is interesting. Perhaps, the author overemphasizes the importance of the graduate degree bestowed by the University upon the fellows (as the doctors in training are called) after meeting certain criteria upon the completion of their training at the clinic. In other university centers doctors in their post-graduate training undertake a similar program without the benefit of a further degree. A fact which is not brought out is that, as the clinic caters almost exclusively to private patients, surgical training, particularly its practical aspect, is perhaps not comparable to training in other centers which have public wards.

In the final chapter, the Present, the reader is taken with a patient, Mr. Smith, along the various steps from admission to his final discharge from the clinic. As the story is told, it is quite clear that Mr. Smith is not really an individual but an ailment with a history number. There is a conspicuous absence of the human, doctor-patient, relationship that is all-important in helping the sick. All the niceties of the marble lobby, the pleasant voices of the various receptionists and laboratory techinicians, and the thorough history taking by the fellow are an asset but certainly cannot replace the genuine doctor-patient relationship. It is inevitable that something must be sacrificed when dealing with an organization as large as the Mayo Clinic. It is unfortunate that it should be the very part that is most cherished by the patient.

Author Wilder presents very well the development of the clinic from its meager beginning. However, throughout the book there is a continuous use of superlatives which lends a feeling of recruitment. As it stands, the book should appeal to the public but, because of its brevity, the account is of necessity superficial.

GEORGE J. D'ANGELO

THE BULLETIN RECENTLY RECEIVED *

Karl Ernst von Baer. *On the Genesis of the Ovum of Mammals and of Man.* Translated into English by Charles Donald O'Malley. With an Introduction by I. Bernard Cohen. Cambridge, Mass.: History of Science Society, Inc., 1956. [Publication from *Isis,* 1956, pp. 117-153.] Ill. $1.00.

W. R. Bett. *Sir John Bland-Sutton, 1855-1936.* Foreword by Lord Webb-Johnson. Edinburgh and London: E. & S. Livingstone (Baltimore: Williams & Wilkins), 1956. viii + 100 pp. Ill. $4.75.

T. B. Layton. *Sir William Arbuthnot Lane, Bt., C. B., M. D.* An Enquiry into the Mind and Influence of a Surgeon. Edinburgh and London: E. & S. Livingstone (Baltimore: Williams & Wilkins), 1956. viii + 128 pp. Ill. $4.75.

Gunter Mann. *Die medizinischen Lesegesellschaften in Deutschland.* Arbeiten aus dem Bibliothekar-Lehrinstitut des Landes Nordrhein-Westfalen, Heft 11. Köln: Greven Verlag, 1956. 120 pp. Ill. D. M. 9.80.

Carlos Martínez Durán. *Tiempo y Substancia del Estudiante Eterno.* Guatemala: Imprenta Universitaria, 1956. xiv + 196 pp. Ill.

National Museum of the History of Science (Rijksmuseum voor de Geschiedenis der Natuurwetenschappen, Leiden, Netherlands). *Guide and Plan.* Leiden, 1956. 12 pp.

* The *Bulletin* reserves freedom of decision as to the publications to be listed in this section.

CONTRIBUTORS TO THIS NUMBER

EMMETT B. CARMICHAEL, Ph. D., is Professor of Biochemistry, University of Alabama Medical School, Birmingham 5, Ala.

GEORGE J. D'ANGELO, M. D., is Assistant Resident, Instructor and Fellow in Surgery, Duke University School of Medicine, Durham, N. C.

T. G. H. DRAKE, O. B. E., M. D., FRCP (C), was formerly Assistant Professor of Paediatrics at the University of Toronto and Director of Laboratories and Research, Hospital for Sick Children, Toronto 2, Canada.

LUDWIG EDELSTEIN, Ph. D., is Professor of Humanistic Studies, The Johns Hopkins University, Baltimore 18, Md.

GEORGE GRIFFENHAGEN, M. S., is Curator, Division of Medicine and Public Health, Smithsonian Institution, Washington 25, D. C.

JEAN LAPRESLE, M. D., is Ancien Interne des Hôpitaux de Paris and Ancien Chef de Clinique à la Faculté.

WYNDHAM B. MILES, M. S., Ph. D., is Historian, Office of the Chief Chemical Officer, Army Chemical Center, Md.

MARTIN G. NETSKY, M. D., is Professor of Neuropathology and Associate Professor of Neurology, The Bowman Gray School of Medicine of Wake Forest College, Winston-Salem, N. C.

JAMES M. NORTHINGTON, M. D., is Editor of *Clinical Medicine*. His address is 2148 Malvern Rd., Charlotte 7, N. C.

F. N. L. POYNTER, Ph. D., FRSL, FLA, is Librarian, The Wellcome Historical Medical Library, Euston Rd., London N. W. 1, England.

LELLAND J. RATHER, M. D., is Associate Professor of Pathology, Stanford Medical School, 2398 Sacramento St., San Francisco 15, Calif.

BENJAMIN SPECTOR, M. D., Professor of Bioanatomy and History of Medicine at Tufts University School of Medicine, Boston 11, Mass., is President of the American Association of the History of Medicine, 1956-58.

EGON V. ULLMAN, M. D., is Chief of Eye, Ear, Nose and Throat Service, Northern Permanente Foundation, 2606 N. E. Broadway, Portland 12, Oregon.

REX E. WRIGHT-ST CLAIR, M. B., Ch. B. (N. Z.), is engaged in general practice. His address is 40 Wellington St., Hamilton East, Hamilton, New Zealand.